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# A
# VOYAGE
# TO
# SPITZBERGEN;

CONTAINING AN

Account of that Country,

OF THE

ZOOLOGY OF THE NORTH; OF THE SHETLAND ISLES;
AND OF THE WHALE FISHERY.

WITH AN APPENDIX,

CONTAINING

An Historical Account of the DUTCH, ENGLISH, and AMERICAN WHALE FISHERIES; some Important Observations on the VARIATION OF THE COMPASS, &c.; and some Extracts from Mr. SCORESBY's Paper on "POLAR ICE."

BY JOHN LAING,

SURGEON.

*Second Edition, Corrected and Enlarged.*

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TO

JOHN R. M'CULLOCH, Esq.

THIS LITTLE WORK IS INSCRIBED,

AS

A SMALL TESTIMONY

OF

THE ESTEEM AND GRATITUDE

OF

HIS MUCH OBLIGED,

AND SINCERE FRIEND,

THE AUTHOR.

# ADVERTISEMENT.

*The Journal I kept when on board the Resolution in* 1806, *is taken as the basis of the subsequent little Work. It may, however, be looked upon as containing the observations I made both in* 1806 *and* 1807, *as I have engrossed into the Narration whatever I observed of consequence the following year.*

# ACCOUNT

## OF A

# VOYAGE TO SPITZBERGEN.

In the year 1806, being at the University of Edinburgh, an advertisement was put on the College Gate by Messrs. P. and C. Wood, merchants, Leith, intimating that a surgeon was wanted for the ship Resolution of Whitby, Yorkshire, engaged in the North Sea whale-fishery.

Impelled by curiosity, and by a still more powerful motive, to visit the snow-clad coast of Spitzbergen, I applied; and was, after due examination, admitted surgeon for the voyage.

Nothing particular occurred on my journey from this to Whitby, where I arrived on Sunday the 16th of March, and was, in every respect, comfortably accommodated at the house of the Captain.

As we did not sail for several days after my arrival, I spent a considerable part of my time in making such remarks on the town as were particularly interesting.

Whitby is a thriving sea-port in the North Riding of Yorkshire, situated on the mouth of the river Esk. It is chiefly celebrated for manufacturing canvas, and for the extensive alum works in its neighbourhood. Its harbour is the best on this coast, and has a fine pier; but it has no river communication with the interior country. Behind the pier is a battery which mounts twelve eighteen-pounders. This town was formerly noted for its Abbey, of which some ruins still remaining testify its ancient magnificence.

Here are different houses of worship, viz. an elegant church of the established religion; and several meeting-houses belonging to Presbyterians, Quakers, Methodists, Roman Catholics, &c. Whitby is 50 miles north-east of York, and 243 north of London; Lat. 54° 30′ North, Long. 1° 55′ West.

The word Whitby is a contraction of its original appellation White-bay, so called from the white surges made by the breaking of the waves along the shore, so that the whole bay assumes a white or frothy appearance to a person standing upon the opposite banks.

Contiguous to this place, in a town called Marton, was born that great circumnavigator Captain James Cook, whose barometer (that which he used in his voyages of discovery,) we had on board the Resolution.

Between Whitby and Lyth, a small town distant about four miles, is a beautiful level strand, generally known by the name of Whitby Sands, upon which there used to be annual races; but now they are less frequent.

Adjacent to Lyth, is the seat of the Mulgrave family, one of whom, Constantine John Phipps, (afterwards Lord Mulgrave,) in 1773, undertook a voyage, by his Majesty's command, towards the North Pole, under the hopes of discovering a passage to the East Indies in a north-east direction; but in which he, like many others, did not succeed.

Among the sands on the shore are found stones resembling snakes without heads, the "*Cornu ammonis*" of naturalists. These stones are easily known by circular, or rather spiral windings marked on their outside. One of these being broken, its interior exhibits the appearance of a snake rolled up and ready to make a spring.

That these are petrified snakes, is really believed by the peasants on the coast, concerning which they tell the following whimsical story:

An old lady, say they, who lived in that neighbourhood some centuries back, having procured a charm, or spell, to banish some noxious reptiles with which that part of the country was then cruelly harassed, set to work, and, by her incantations, collected all the snakes within a considerable distance, and brought them to the banks of Whitby, whence she hurried them down so precipitately on the strand, that they all broke their necks, and of course, in their petrified state, are found without heads.*

Not many years ago Whitby sent upwards of twenty vessels to Greenland; but afterwards that trade fell much to decay, until it was latterly revived by the persevering activity of Captain Scoresby, whose many successful whale-fishing voyages, tended greatly to promote the opulence of this town, by encouraging others to embark in the same lucrative business.

The Resolution, in which I made this voyage, was a stout new ship of about four hundred tons burden, fitted out as a letter of marque, carrying twelve six-pounders besides stern-chasers, and well furnished with firelocks, pistols, swords, cutlasses, bayonets, &c. She was provided with nine fishing boats, and her crew consisted of between sixty and seventy men.

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* They affirm that this part of the coast has never since been frequented by those venomous creatures, although they are quite common in other parts of the kingdom. *Credat cui placeat.*

Greenland voyages are generally performed in the course of four or five months; but lest vessels should be detained by the ice beyond that time, they have usually nine months provision on board.

Our ship was abundantly supplied with good beef, pork, bacon, flour, oat-meal, biscuit, peas, potatoes, cheese, butter, molasses, preserved fruit, fowls, eggs, dried fish, strong ale, small beer, English brandy, tea, coffee, sugar, tobacco, besides plenty of foreign spirits and wines for the use of the cabin. Neither was there any cost spared in laying in an ample supply of proper medicines and cordials for the sick.

Early on the morning of the 23d of March we set sail from Whitby, amidst the hearty cheers of a numerous concourse of spectators.

Being favoured with a fresh breeze which caused a heavy swell, a general sickness prevailed at our first setting out, from which the most experienced seamen were not exempted, and which affected me so severely, as to preclude all possibility of making any remarks previous to our landing in Shetland.

On the 25th at noon, we cast anchor in Bressay Sound, opposite Lerwick, the capital of the Shetland Isles.

This town is situated in Mainland, so called from its being the principal of these Isles. It is about half a mile long, and is irregularly built; but contains some good houses, and is inhabited by about one thousand eight hundred persons. It is the seat of the courts held by the Sheriff-depute, or Steward-depute. Two packets, or traders, having good cabins, and tolerable accommodation for passengers, sail occasionally between this and Leith.

Lerwick derives its chief support from the courts of law, and from the vessels employed in the whale-fishery making this harbour their rendezvous.

Near the north end of the town stands Fort Charlotte, a small fortification mounting eighteen large guns, from eighteen to thirty pounders, besides several very large field-pieces. It commands the north entry to Bressay Sound, and is garrisoned by a small detachment of invalids.

In the neighbourhood of this town there is a chalybeate spring, but it is not much esteemed for its medical virtues.

Bressay Sound lies between Lerwick and Bressay island, and forms an extensive and commodious harbour, in which 1000 vessels well found may ride at all seasons in the greatest safety. Here the Dutch herring fleet used to rendezvous about the middle of June. This harbour has the particular advantage of two entries, one from the south, and another from the north.

On the outside of the north entry lies a sunk rock, called the Unicorn. On this rock was wrecked the Unicorn man-of-war sent out in pursuit of the Earl of Bothwell, who fled to Shetland; hence the rock has its name. The paltry village of Scallaway lies also on the Mainland, and has an excellent harbour. Near this is the ancient castle of Scallaway, built by one of the Earls of Orkney.

These are the only two towns, or villages, in the Shetland Isles.

Mainland is upwards of sixty miles long from north to south; and in some places upwards of twelve miles in breadth; it is so shaped, that no part of it lies above *three miles from the sea*; and consists of a great multitude of irregular promontories, and a vast number of peninsulæ connected by narrow isthmuses, insomuch that it abounds with bays and harbours almost innumerable.

In the parish of North Mevan, a peninsula belonging to this Island, stands the cloud-capt mountain of Rona, the highest in Shetland. It is eight miles long, four broad, and three thousand nine hundred and forty-four geometrical feet above the level of the sea; serving for a land-mark to fishers, and vessels coming from the Northern Ocean. From the top of this lofty eminence the eye commands an extensive and pleasing prospect, stretching fifty miles at least in every direction. The great number of small islands and peninsulas scattered beneath, and often a distant view of vessels, in summer, affords a most agreeably diversified scene.

On the summit of this mountain stands a house, called the Watch-house, in which six or seven men can sit. It is constructed of four large stones, covered by two more for a roof, on the top of which is erected a pyramidal tower of small stones.

In the same parish stands a rock rising perpendicular on all sides to a vast height, which at a few miles distance looks like a ship under full sail. Near to this are two very high inaccessible pillars, on which the large species of cormorants breed. What is extraordinary, the rock possessed by these birds one year is deserted the next, and returned to again after being a year unpossessed. This singular practice has been carried on time immemorial.

Here is a small isle, called Dorholm, perforated by a vast arch seventy feet in height, under which boats fish, having light from an opening at the top.

Next to this is the holm and isle of Stenness, so much celebrated for the great number of kittiweaks which resort to it; the young of which being esteemed delicious food, are taken in great abundance.

To the north of Stenness is the Maiden Skerry, a rock so called from its having never been trodden on by man. The lofty rock called the Ocean Skerry, stands about two miles from this, and serves as a good landmark for ships wanting a harbour in their passage from the north.

Not far from this rock is the island of Papa, having a natural cave of three entrances, through which the tide ebbs and flows. It has several apartments, and is wide enough to admit a large boat with the oars at full length on each side. This gloomy cavern grows gradually wider towards the centre, which nature has ornamented with a beautiful arch. Beyond this, the boat is directed by a small gleam of light from an aperture in the top.

The island of Bressay lies to the east of Mainland, and is about four miles long, and two broad.

Adjoining to this Island, and on the south-east side of it, lies the small but fertile Island of Noss, the south headland of which is not less than four hundred and eighty feet in perpendicular height. Opposite to this, and distant ninety-six feet from the Island, stands another perpendicular rock or holm, of the same height, quite level at the top, and producing excellent pasture for sheep.

To transport them there, however, might well have been thought impossible; but human ingenuity requires only the exhibition of difficulties in order to overcome them. An islander climbed up the rock, and having fastened some ropes to stakes he drove into the soil on the top, threw them across the intervening chasm to the headland, where they were in like manner fastened. A cradle or basket was then drawn along these ropes, and sheep are thus transported to, and from the holm; and the eggs or young of the sea-fowl, which there breed in vast numbers, fall an easy prey to the skill and industry of man.

The adventurous islander who first ascended the holm, and shewed the possibility of joining it to the Island, from an excess of bravery, met with an untimely end. Disdaining to pass over in the cradle, and trusting that the same expertness which had conducted him to the summit of the rock would enable him to descend to its base, —he fell and was dashed to pieces.

*Quem si non tenuit, magnis tamen excidit ausis.*

It may be observed, that both men and horses are transported over the rapid rivers of South America in a similar manner. Vid. *Ull. Voyage de l'Amerique*, vol. i. p. 358.

As there is a considerable discrepancy in authors as to the height of this rock, and the breadth of the chasm; and not having myself an opportunity of examining it, I have followed the account given by the accurate Pennant in his *Arctic Zoology*.

The erection of a light-house on the Island of Noss would be of essential service to the interests of Navigation. Many valuable ships, and among others, a Russian frigate of 38 guns, have been lost on the east coast of the Shetland Isles.

To the north of Mainland lies Yell, an island twenty miles long, and nearly twelve broad, with several good harbours, or voes, as they are called by the inhabitants.

Foula lies to the west of Mainland. It is about three miles long, and one and a half broad, and has only one harbour. This is called Ham, and is much resorted to by fishermen. Foula is thought by some to be that Island which the ancients reckoned the ultimate limit of the habitable globe, and to which, therefore, they gave the appellation of "Ultima Thule." This supposition is not founded solely on the mere analogy of the name, but also on the authority of Tacitus, who, speaking of the victories obtained by Agricola, and how far he penetrated northward, uses this expression: "*Insulas quas Orcadas vocant invenit domuitque; dispecta est et Thule quadamtenus.*" *Tacit. Vit. Agric.* § 10. But though the high land of Foula may be easily seen, in a clear day, from the northern part of the Orkneys, still it is doubtful whether this be really the island so called; because had the Roman fleet passed to the north of the Orkneys, they must have seen Mainland, Yell, and Unst, lying to the north of Foula. It may be further observed, that the description of Thule, as given by Pomp. Mela, lib. 3. § 6, and Pliny, lib. 2. § 75, and lib. 4. § 16, is not reconcileable with the supposition of its being identical with Foula. At Thule, says Pomponius, "*Per Solstitium vero nullæ (noctes sunt) quod tum jam manifestior non fulgorem modo sed sui quoqüe partem maximam ostentat.*" This phenomenon, as Vossius has observed, can only belong to the 66th and 67th degree of latitude, and gives considerable countenance to the opinion of Thule being the same with Iceland.

The statement of Pliny, who is not celebrated for geographical accuracy, is alike irreconcileable with either hypothesis, and belongs only to the Pole itself.

These (with the exception of Unst,) are all the islands belonging to Shetland that are worth notice, though they are nearly forty in number. About seventeen of these are inhabited; the rest being inconsiderable, are called Holms, and used only for pasture.

On our arrival in Bressay Sound, there were anchored twenty-six ships from London, Hull, and Whitby, each of which, in turn, gave us three cheers, which we as often returned. All these ships were waiting for men, it being the place where most of the ships bound to the Greenland fishery call at to make up their complement.

The Captain finding men very scarce, and wages high, did not engage any hands at Lerwick.

We afterwards weighed anchor and sailed out of the north entrance for Balti Sound, Island of Unst.

Balti Sound is in the middle of the east side of the Island, into which it stretches nearly two miles. Before the entrance, is a large narrow Island, called Balti, whence the Sound derives its name, and which shelters it from all winds, forming an excellent safe harbour or anchoring place. If a ship be leaky, there are several very commodious beaches on which she may be laid until thoroughly repaired. This harbour used to be the most frequented of any in Shetland, especially by ships going to Archangel and Greenland.

Unst, the remotest of the Shetland Isles, and most northern part of his Britannic Majesty's dominions, is supposed to be about eight miles long and four broad.

A hill called Vallafield rises within a mile and a half of its northern extremity, and runs directly parallel to the western coast, to the very northern point. It is six hundred feet high. At right angles with this hill, stands Crossfield, nearly in the middle of the island. To the north lies Saxaforth, which is seven hundred feet high. It is the highest in the Island, and may be seen upwards of forty miles off the coast. A hill, called Vordhill, runs parallel to the east coast

Among these hills are tracts of level fertile ground, and the highest hill is some feet covered with black moss. Unst contains many fresh water lochs. That of Cliff is two miles long, and nearly half a mile broad. The banks of this loch exhibit pleasant and most beautiful scenery. From this loch a few smaller ones run to the southern part of the Island.

The headlands here rise to the height of sixty or seventy fathoms; but the shores of the bays and harbours are low and sandy.

About this Island are scattered here and there a great many very small ones.

Around the coast are several curious natural caves. One at Sha has its roof supported by octagonal pillars.

At Burra Frith are a vast number of small caves, running from the sea under the hills. One of these only is entered once a year, and robbed of the seals which frequent it. The rest are mostly inaccessible.

To the east of this, under an arm of the hill of Saxaforth, is a magnificent natural arch three hundred feet long, and of a considerable height, through which a boat can row.

The Shetland Isles, (called by the Dutch, Zetland; and by the Danes, Yetland,) lie between sixty and sixty-one degrees of north latitude, and have their longest day about nineteen, and their shortest about five hours.

These Islands, with those of the Orkneys, make one of the counties of Scotland, which send a representative to the British Parliament.

The climate of these, as of all other Isles of like size, is far from being settled. The atmosphere is, in general, moist. They have also heavy snows, but not much frost; and are often visited by dreadful storms of wind, rain, and thunder, in so much that the water is agitated even to the bottom of these comparatively shallow seas.

Owing to the great refraction of northern latitudes, for about three months in summer they enjoy the sight of the sun almost without intermission; but, for the same space in winter, (especially in December,) that luminary hardly rises above the horizon, and is commonly obscured by clouds and mists.

> The sun from far shows with a sickly face,
> Too weak the fogs and mighty dews to chase.

In this gloomy season, the absence of day is supplied partly by moon-light, and partly by the radiance of the *aurora borealis*, or merry-dancers, as they are called in these Islands. These are the constant attendants of clear evenings, and prove great reliefs amidst the gloom of the dark winter night. They commonly appear at twilight near the horizon, of a dun colour, approaching to yellow; sometimes continuing in that state for several hours without any apparent motion, after which they break out into streams of stronger light, spreading into columns, and altering slowly into ten thousand different shapes, varying their colours from all the lines of yellow to the most obscure russet. They often cover the whole hemisphere, and then make the most brilliant appearance. Their motions at these times are amazingly quick; and they astonish the spectator with the rapid change of their form. They break out in places where none were seen before, skimming briskly along the heavens: are suddenly extinguished, and leave behind an uniform dusky tract. This again is brilliantly illuminated in the same manner, and as suddenly left a dull blank. In certain nights they assume the appearance of vast columns, on one side of the deepest yellow, on the other declining away, till it become undistinguished from the sky.

They have generally a strong tremulous motion from end to end, which continues till the whole vanish. According to the state of the atmosphere, they differ in colours. They often assume the colour of blood, and make a most dreadful appearance. The rustic sages represent these phenomena as prognosticative of future events, and thereby affright the gaping multitude with dread of war, famine, and pestilential devastations. Vid. Pen. *Arct. Zool.* vol. i. p. 27.

The ebb tides here run north, and the flood tides to the southward, unless on the north and south extremities of the country, where they run east and west; but their rapidity is inconsiderable when compared to that of the friths of Orkney.

The shores are generally lofty, and rise almost perpendicular from the ocean.

I went out with the Captain in one of the ship's boats, and sailed round some of the headlands of Unst. The scene was truly sublime:—fogs immured their summits; the noise of the sea dashing against the rocks;* and the screams of the eagles and other birds of prey, which there enjoy perfect security; combined with the sombre and terrific appearance exhibited by these bulwarks of nature, impressed us with awe and a pleasing kind of astonishment. The prospect to me was quite novel. I had formerly been familiar only with champaign countries; but I had no difficulty in declaring, that it was from some such scene as this only, that one could form an adequate conception of natural magnificence.

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* *Planctus illisæ cautibus undæ.*

The face of the country exhibits a prospect of black craggy mountains and marshy plains, interspersed with some verdant spots which appear smooth and fertile. Neither tree nor shrub is to be seen, except the juniper and heath.

> Throughout the horrid wild no tree was seen,
> Earth, clad in russet, scorn'd the lively green.

This want of trees and shrubs is the more remarkable, as in different parts of these Islands there are evident marks of their having been once a wooded country. In the Island of Foula are often found the remains of large trees laid bare by the violence of some tempest, carrying away the strata which covered them. At present, however, no kind of wood can be made grow: and it is found extremely difficult to cultivate even the lowest and most common shrub. This decrease of vegetation has not been satisfactorily accounted for.

The nature of the soil is very different. In some places it consists of deep moss, with a sandy bottom; in others the moss is only about a foot deep over a stratum of clay. The cultivated parts consist generally of a mixture of clay and small stones. In some places there is abundance of tough clay, similar to that used in Britain in the manufacture of bricks or pottery.

No coal has hitherto been discovered in these Islands, but in several of them are found limestone, freestone, rock-crystal, corals, white spar, iron ore, copper ore, sulphur, fuller's earth, and veins of variegated jasper.

Springs of fresh water are frequent in the mountains; and there are numerous lakes and streams, abounding in salmon, trout, &c.

Along the shores are a great many ancient towers, originally known by the name of Burrows or Duns; but by the inhabitants they are now called Wart or Wardhills. They were so arranged, that the whole Islands could, by signals from one to another, be apprised of approaching danger in a very short time. Sometimes they were used for state prisons. Vid. Baxter, *Gloss. Antiq. Brit.*

Some of these are surrounded with dry ditches, others with walls. I saw one in Unst, called Snaburgh, which has both a wet and a dry ditch. One of these ditches is cut with great labour through the solid rock.

There is another in Fetlar, (one of the most remote of the Shetland Isles,) in the form of a Roman Camp, having in the middle a rectangular area surrounded by a wall, and that by an earthen rampart of the same figure. Vid. Plate, *Pen. Arct. Zool.* vol. 1. p. 33.

Druidical circles of stones are also common here.

There have also been found swords made of the bones of large fish, flint heads of arrows, flint hatchets, &c.

In the Island of Unst are two curious sepulchral circles. The largest consists of three concentric circles, its greatest being fifty feet in diameter. The outermost circle is formed of small stones, the other two of earth. Through all these is a single narrow entrance to a *tumulus* which stands in the centre.

The other circle is considerably less, and has only two rings made of earth.

An extensive burying-place has also been discovered in the Isle of Westra, by the violence of the winds blowing away the sands which covered the bodies twenty feet below the surface of the earth. Near this are a great many graves, discovered only by a few short upright stones set in the level sand.

Among the human bones have been found those of oxen, horses, dogs, and sheep; as also battle-axes, different kinds of swords, brazen daggers, knives, spoons, cups, curious stones, beads, &c. At one time there was found a thigh bone closely encircled by a ring of gold. Pen. *Arct. Zool.* vol. i. p. 36.

In the more early stages of society, this custom of burying weapons, and the rude symbols of worship along with the dead, was perhaps every where practised. The Catacombs of Egypt, and the Tumuli of Peru, abound with relics of this description. The following verses of Virgil allude to the same ceremony:

> Some in the flames,* the wheels and bridles throw,
> The swords and helmets of the vanquish'd foe;
> Some the known shields their brethren bore in vain,
> And unsuccessful jav'lins of the slain.
>
> Pitt's *Virg*. lib. 1. xi. 266.

It has been long since observed, that the two extremes of heat and cold are alike unfavourable to the growth of such animals as may be considered indigenous to the temperate zone. Excessive heat in the one case induces relaxation; while the contrary extreme diminishes the vital principle, and stunts the growth of the animal. The animals common to Britain are, in the Shetland Isles, of a greatly reduced size. Their horses, familiar to us by the name of shelties, are very numerous, and seldom more than nine or ten hands high. They are covered with long hair, and are remarkably strong, spirited, and not unhandsome. They are chiefly used for carrying home peats, and never receive any food but what they gather from the scanty herbage of the ground: Neither are they ever put into a house, so that many of them die in the winter.

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* The funeral piles.

The steadiness with which these ponies travel through the most rugged paths is surprising. In both 1806 and 1807, I made several expeditions into the country mounted on them. An islander preceded me to point out the way. At first I thought my brains must have been dashed out, but I soon recovered from this panic. In the most wretched and precipitous paths, the animal never made a single false step, and also travelled with considerable agility.

The Shetland cows are also very small, and owing to the scarcity of fodder, give but little milk. They are kept close in the house, summer and winter; and are littered with heath, and sometimes with peat mould.

The women of Shetland are, in general, ignorant of making cheese; but their butter, when manufactured for sale, is equal to any that can be found elsewhere. That made for the payment of rent is of a much inferior quality.

It was an old custom here to pay their rent one half in grease butter at Lammas, and the other half in money at Martinmas. This custom, however, is generally relinquished, and the butter converted into money.

Their method of making butter being curious, I have thought proper to describe it. They fill their churn with milk, which they churn in the usual way till the oleaginous part be made to separate from the serum. They then throw in some red-hot stones, and continue churning till the butter float at the top, when it is taken out, and carefully washed and salted. The buttermilk being boiled, what floats on the surface is used as food, and the residue is esteemed an excellent beverage; and when kept over winter, they reckon it an efficacious antidote against the bad effects arising from the constant use of fish.

Their swine are of a remarkably small size, short backed, and easily fed. A pig ready for the spit is often sold at two shillings.

Their sheep (the most profitable part of their live stock, and which are calculated to be from 110,000 to 120,000 in number,) are likewise of very small growth. One between three and five years old, sells from four to seven shillings.

In winter, especially when the ground is covered with snow, these animals feed on the sea-weed, with which the shores are covered. This they resort to by a kind of natural instinct; for as soon as the tide begins to ebb, the whole body of them (although feeding several miles off,) make for the sea shores, where they stay as long as the tide will permit them, and then return to their usual walks.

The wool of these sheep is remarkably soft and fine; but there is so much diversity in its quality, that some stockings at L. 2, 2s. per pair, and others at sixpence, are made from it. The common price of tolerably good stockings is from five shillings to half-a-guinea per pair. They are all knitted. The very fine ones, which are esteemed superior in value to silk, will pass through a small finger ring. The different colours of the wool are white, black, light grey, and sometimes a russet. The sheep are never shorn; but early in June the wool is pulled off without injuring the animal. In this process care is taken to leave the long hairs which grow amongst the wool, by which means the young wool is sheltered, and the animal kept warm and comfortable.*

The people of these Isles have attempted to introduce a larger breed of sheep from Britain, but the inclemency of the climate rendered their labours abortive. This verifies what the famous Scottish historian says of these Isles:

"*Adeo fera, ut nullum animal nisi illic natum ferat.*" Buch. lib. 1. § 50.

Here are neither hares nor foxes, though rabbits are plenty; the skins of which are sold at about half-a-guinea per dozen. The flesh of these is nothing inferior to those of Britain, though they are somewhat less in size.

The other wild quadrupeds which have reached these Islands, are, the otter, brown rat, common mouse, fetid shrew, and bat.

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* Shetland sheep seem to be peculiarly calculated for an insular situation, hence they are distinguished by Sir John Sinclair by the name of "Island sheep."

"It has been lately discovered that the skin of this breed, with the fleece on, may be prepared so as to make a beautiful fur; and their excellent quality may probably make them fit to be converted into morocco leather, the raw material of which cannot easily be procured in sufficient quantities." Vid. Report of the Society for the Improvement of British Wool.

The Shetland Isles abound with several kinds of birds, as curlews, snipes, grouse, green plovers, redshanks, herons, and other *waders*. The short-eared owl is also frequently seen here, and makes its nest on the ground. This species never flies, like other owls, in search of prey, but sits quiet on an eminence, watching like a cat the appearance of mice or other vermin. No partridges are found in these Isles, and many of the other birds migrate to a warmer clime on the approach of winter.

The lofty cliffs impending over the ocean, are the haunts of eagles, falcons, ravens, hawks, hooded crows, &c. The Erne-eagles, which are very ravenous, and destructive among the lambs, possess the most exalted precipices, and, like the falcons, will not admit of any society. This, Pliny, in his *Hist. Nat.* lib. 10. c. 3. beautifully expresses:—"*Unum par Aquilarum magno ad populandum tractu, ut satietur, indiget: determinant ergo spatia nec in proximo prædantur.*"

A premium of three shillings and fourpence is obtained for killing one of these eagles; and smaller premiums are given for killing less destructive birds.

Here are also seen grey linnets, larks, sparrows, red breasts, wrens, landrails, and stone chatters.

The tame fowl are, geese, ducks, pidgeons, dunghill fowl, and some turkeys.

To the winding bays resort swans, dunter, elack, and soland geese; teal, Greenland doves, shearwaters, kittiweaks, (which are amazingly numerous,) different kinds of gulls, cormorants, and other aquatic birds.

In the Islands of Unst and Foula is bred a bird of the web-footed kind, called Skua, about two feet long, having its claws sharp, strong, and hooked like those of a kite. It preys on the lesser water fowl like a rapacious land bird, and is so remarkably courageous, and fierce in defending its young, that it will even repel the eagle from its haunts. Some birds are driven here by the frost from the inclement north, and pass their winter in the Shetland bays; whilst others, (mostly of the palmated kind,) retire in the spring to more southern latitudes. The guillemot remains in these Islands till November.

This is a very pretty bird, about one foot and a half long. Its bill is about three inches long; head, neck, back, wings, and tail of a deep mouse colour. Its breast and belly milk white. There is another bird, called the stormy petrel, of a black and white colour, with a black bill much hooked at the end. It breeds commonly among the loose stones on the shore; and bounding into the water, often affrights the superstitious fishermen, who take it to be an omen of some impending disaster. These birds are found at all distances from land, in all parts of the Atlantic, from Great Britain to the coast of North America; and follow ships in great flocks. On account of their clamour at night (being silent through the day) they are hated by sailors, who (imagining they forebode a storm,) call them witches.

Our sailors shot many of these birds; but that had not much effect in making the others keep a more respectful distance.

Many of the inhabitants of these Islands feed, during the season, on the eggs and young of wild birds. These they procure in a very dangerous manner from cliffs, in some places from sixty to one hundred fathoms high. The attempt is mostly made from above. The dauntless adventurer descends by a rope made either of straw or hog's bristles, and held by a person at the top. Oftentimes the rope breaks, and the unhappy fowler is either dashed to pieces or drowned. The necessity of shifting the rope from place to place, with the impending weight of the fowler and his prey, renders the attempt much more hazardous.

deep over a stratum of clay. The cultivated parts consist generally of a mixture of clay and small stones. In some places there is abundance of tough clay, similar to that used in Britain in the manufacture of bricks or pottery.

No coal has hitherto been discovered in these Islands, but in several of them are found limestone, freestone, rock-crystal, corals, white spar, iron ore, copper ore, sulphur, fuller's earth, and veins of variegated jasper.

Springs of fresh water are frequent in the mountains; and there are numerous lakes and streams, abounding in salmon, trout, &c.

Along the shores are a great many ancient towers, originally known by the name of Burrows or Duns; but by the inhabitants they are now called Wart or Wardhills. They were so arranged, that the whole Islands could, by signals from one to another, be apprised of approaching danger in a very short time. Sometimes they were used for state prisons. Vid. Baxter, *Gloss. Antiq. Brit.*

Some of these are surrounded with dry ditches, others with walls. I saw one in Unst, called Snaburgh, which has both a wet and a dry ditch. One of these ditches is cut with great labour through the solid rock.

There is another in Fetlar, (one of the most remote of the Shetland Isles,) in the form of a Roman Camp, having in the middle a rectangular area surrounded by a wall, and that by an earthen rampart of the same figure. Vid. Plate, *Pen. Arct. Zool.* vol. 1. p. 33.

Druidical circles of stones are also common here.

There have also been found swords made of the bones of large fish, flint heads of arrows, flint hatchets, &c.

In the Island of Unst are two curious sepulchral circles. The largest consists of three concentric circles, its greatest being fifty feet in diameter. The outermost circle is formed of small stones, the other two of earth. Through all these is a single narrow entrance to a *tumulus* which stands in the centre.

The other circle is considerably less, and has only two rings made of earth.

An extensive burying-place has also been discovered in the Isle of Westra, by the violence of the winds blowing away the sands which covered the bodies twenty feet below the surface of the earth. Near this are a great many graves, discovered only by a few short upright stones set in the level sand.

Among the human bones have been found those of oxen, horses, dogs, and sheep; as also battle-axes, different kinds of swords, brazen daggers, knives, spoons, cups, curious stones, beads, &c. At one time there was found a thigh bone closely encircled by a ring of gold. Pen. *Arct. Zool.* vol. i. p. 36.

In the more early stages of society, this custom of burying weapons, and the rude symbols of worship along with the dead, was perhaps every where practised. The Catacombs of Egypt, and the Tumuli of Peru, abound with relics of this description. The following verses of Virgil allude to the same ceremony:

> Some in the flames,* the wheels and bridles throw,
> The swords and helmets of the vanquish'd foe;
> Some the known shields their brethren bore in vain,
> And unsuccessful jav'lins of the slain.
>
> Pitt's *Virg.* lib. l. xi. 266.

It has been long since observed, that the two extremes of heat and cold are alike unfavourable to the growth of such animals as may be considered indigenous to the temperate zone. Excessive heat in the one case induces relaxation; while the contrary extreme diminishes the vital principle, and stunts the growth of the animal. The animals common to Britain are, in the Shetland Isles, of a greatly reduced size. Their horses, familiar to us by the name of shelties, are very numerous, and seldom more than nine or ten hands high. They are covered with long hair, and are remarkably strong, spirited, and not unhandsome. They are chiefly used for carrying home peats, and never receive any food but what they gather from the scanty herbage of the ground: Neither are they ever put into a house, so that many of them die in the winter.

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* The funeral piles.

The steadiness with which these ponies travel through the most rugged paths is surprising. In both 1806 and 1807, I made several expeditions into the country mounted on them. An islander preceded me to point out the way. At first I thought my brains must have been dashed out, but I soon recovered from this panic. In the most wretched and precipitous paths, the animal never made a single false step, and also travelled with considerable agility.

The Shetland cows are also very small, and owing to the scarcity of fodder, give but little milk. They are kept close in the house, summer and winter; and are littered with heath, and sometimes with peat mould.

is limestone; but the seasons are so various, that it is impossible to state the precise time of harvest.

The grain crop consists of a small kind of black or grey oats, and a species of barley, commonly called bear or big. The oatmeal has a bitter burnt taste. The potatoes, however, are tolerably good.

Very little time is, in general, devoted to gathering of manure. Sometimes they make use of sea-weed either by itself, or made into small dunghills with cow dung or earth. Notwithstanding that they have abundance of limestone and peats, they seldom use lime as a manure, owing to which neglect, and the want of fallowing, they have frequently a plentiful crop of weeds.

There is a very great stop to agricultural improvements still to be considered. Most of the tenants hold their farm from year to year by a verbal bargain; and the stipulations of the very few written leases that are granted, consist chiefly in binding the tenant assiduously to attend his landlord's fishing as long as he possesses his farm. Now, any failure in this is a forfeiture of the agreement. But he may labour the land as he pleases; no question is asked on this head by the landlord.

The grain is cut down in the usual way, and when fit, is carried home either on the shoulders of the women, or on horseback.

There are not more than two or three carts in these islands, and these are only kept by gentlemen by way of novelty. Neither are there any roads, public or private, except the foot-paths made over the hills by the horses, cattle, and sheep.

The landlords build the farm-houses at their own expense. They are generally mean, low huts, into which a person must enter in a bending posture; and if he have not a guide (unless he be acquainted with the windings of the fabric,) he will scarcely find the apartment occupied by the family, they and their cattle being, for the most part, inhabitants of the same building.* They have the fire in the middle of the house. The beds are commonly like those of ships, with sliding doors. A table, a pot, and some stools, are the principal furniture to be seen.

Whether there were any chests, presses, cupboards, &c. in any of the huts which I visited, the continual smoke would not admit being ascertained. It is evident, however, that they are exempt from the window tax, as they have only a small hole besides that of the chimney, on which is a door to shut and open occasionally.

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* ——Ignemque Laremque
Et pecus et dominos communi clauderet umbra.—JUVENAL.

The office-houses (where there are any,) are truly despicable. These the tenants build at their own expense, and in the cheapest manner they can, on account of the uncertainty of their tenure.

Here are few inclosures, so that the land lies almost wholly in open fields; and by this breach of agricultural economy their crops are exposed to the ravages of the numerous sheep, cattle, &c. which feed on the commons without herdsmen.

These islanders trade chiefly to Leith, London, and Hamburgh; and with Dutch fishermen, and such ships as visit their coasts. The chief exports are linen and woollen yarn, rugs, stockings, butter, dried fish, herrings, oil, feathers, skins of various kinds, and kelp; the manufacture of which was first commenced in 1760. The commodities imported are corn, oatmeal, spirits, tobacco, lines and hooks, salt, &c.

Here the Greenland ships are frequently served with mittens, night-caps, comforters, wigs, &c.

The inhabitants are sure to come with their boats alongside such ships as happen to call in here. They bring with them fish, fowl, eggs, &c. for which they get beef, pork, flour, meal, or such provisions as they may wish to have. They choose rather to barter than sell for money, probably for this reason, that they generally get more than the value of their commodities; at least, they do not fail to ask plenty, and have cunning enough to lay down their case as very deplorable, which tends to excite in the breasts of commanders of vessels, that sympathy which is so peculiar to sailors. The Shetlanders by these means, find a very good market for such things as they have to dispose of, and generally get as much meat and drink as they can take while on board.

The Shetland Isles are divided into 12 parishes, in which are placed 12 ministers, the office of some of whom is very laborious, there being different small islands in one parish: besides, the paths are remarkably bad, and the people so wretchedly poor, that they cannot afford to accommodate their pastor in times of public examinations, visitations, &c. insomuch, that unless he carry with him, on those occasions, some store of *viaticum*, he must content himself with the soothing hope of a hearty meal on his return home.

These islands enjoy the advantage of parochial schoolmasters, having the salaries allowed on the Scottish establishment; by which means the inhabitants are all taught to read, write, and understand arithmetic; and among those of any rank, the Latin, Greek, and French languages are not unknown, as also the rudiments of the mathematics.

The English language prevails in all these islands; but they being a long time subject to the Kings of Norway, it is spoken with the accent of that country, and is mixed with a great many Norwegian words, especially in Foula Neither here nor in the Orkneys is the Gaelic language known.

English as well as Danish money is current here; but neither species is superabundant.

According to the latest account, this group of islands contains 22,379 inhabitants, among whom are about 2 considerable proprietors, and a great many small ones. The whole land-rent amounts to about L. 5000 per annum, which is a small sum when compared with the profits the proprietors make by the fisheries, in which they are all concerned. This business is carried on by the tenants; an affair which tends much to affect the state of the common people at large. The landlords, as before mentioned, make their lands subservient to this trade, by setting them in small portions to fishermen: and, in order the more to propagate the human species for the purpose of fishing, the young men get premiums of small subdivisions of land, (though without lease,) on their taking wives. The poor, who thus swallow the matrimonial bait, getting more numerous families than they can maintain, and having no way of supporting themselves but by the fish which they take, (and which they are obliged to sell to their landlords at a fixed price,) are often necessitated, either to go on board such merchant vessels as call in here, or to enter voluntarily into his Majesty's Navy. In many places, three or four families are found on a farm which thirty or forty years ago was possessed only by one.

Unmarried men have another inducement to enter into matrimony; for when Government requires a number of men for the Navy, the proprietors take good care to send off those who are unmarried. By these factitious regulations, the population has become superabundant, insomuch that the produce of the islands does not support their inhabitants more than seven or eight months in the year.

Before the proprietors of lands became so deeply engaged in the fishing business, juvenile or premature marriages were, in these islands, looked on as next to a crime, because thereby the population might increase to such a degree as to become ruinous and oppressive to the whole community. For this reason, a regulation was made against marriage, unless when the parties could produce evidence that they possessed L.40 Scots, or L.3 : 6 : 8 Sterling. This salutary law is now never enforced, to the great prejudice of the whole inhabitants. It is curious to observe how the principles of Mr. Malthus accommodate themselves to, and receive illustration from, the smallest societies.

The secluded inhabitants of these solitary isles are very unhealthy, and seem to complain of one general disorder, which is of a phthisical and scrophulous nature, the cause of which evidently seems to be this: the men are exposed to intense cold at the fishing, where they remain twenty-four, thirty, and sometimes forty-eight hours in open boats; get their feet wet; and when they come home have but very sorry cheer to accommodate themselves with; nor is their daily employment sufficiently laborious to prove a healthful exercise. Hence proceed colds, coughs, phthisis, pulmonalis, and every thing which renders the frame a complete nest of complicated disorders. The women above the common rank, lead a very sedentary life, and seldom appear out of doors, unless at church, which, probably on account of its great distance from them, they do not often visit. Besides, tea has found its way into these dreary regions, a constant use of which is the well-known enemy of those who lead sedentary lives, and do not take exercise sufficient to promote the necessary secretions. Hence come on relaxation of the solids, indigestion, flatulency, glandular obstructions, hysterics, &c.

None of the female sex here appeared so healthy and blooming as those employed in cultivating the ground.

During our stay here in both 1806 and 1807, I was asked to visit different sick patients, and found a private infirmary almost in every house. To some of these I hope I gave useful medicines; to others I gave only some simples to satisfy them, as I found they were fast hastening to that "bourn whence no traveller returns."

Medical advice and drugs are at a very exorbitant price here; and such cordials as wine, &c. cannot be procured for love or money. As the

Captain was so charitable as to allow me to give medicines gratis to such as were really objects of compassion, I took nothing for my trouble in preparing them, or visiting the sick; knowing, that if God should be pleased to make me an instrument in relieving the distressed, I would be more than amply repaid.

April 3d. Having got eight men at Balti Sound, we weighed anchor at ten A. M. and sailed out of the north entrance with a fine south-west breeze.

For some days we had fine clear frosty weather, during which time no particular occurrence took place.

On the 12th, at four P. M. we saw the long narrow island of Jan Mayen, (so called from the name of its discoverer,) bearing north-east, and distant about ten leagues. It lies in about 71° N. Lat. and 8° 15′ E. Long. from Ferro. Vid. Forster's *Hist. Voy. to the North*, p. 422.

This island was once, in honour of Prince Maurice of Nassau, called *Mauritius Island* in *Greenland*, to distinguish it from Mauritius Island on the N. W point of Spitzbergen. It stretches from N. E. to S. W. The north end rises into a high mountain called Beerenberg, from its being haunted bv bears; though its steepness renders it inaccessible to man. A hundred yards from the shore the water is about sixty fathoms deep; but a little farther out no soundings have been found.

The seas neighbouring to this island were formerly much frequented by whale-fishers, (especially from 1611 to 1633); but the whales are now seldom found here, having withdrawn to the ice, where they enjoy more security.

The bears, sea-horses, and other voracious marine animals, together with the foxes and carnivorous birds, not finding so good a supply of whale carrion as usual, have also, in a great measure, deserted the coast.

On the land are still seen some vestiges of those temporary buildings where the fishers of that time boiled their blubber. But this practice of boiling blubber in the North has long since been discontinued, and is now performed on the return of the vessels to their respective ports.

In 1633, seven sailors were left in Jan Mayen Island to winter; but on the 7th of June following, they were all found dead, (chiefly of the scurvy,) by some people from Holland, who arrived there. It was evident that they had lived through the winter, as their journal was carried down to the 30th of April, soon after which they must have fallen victims to disease.

It is necessary to observe, that the Dutch at this period entertained hopes of being able to found some permanent establishments in the North, and that for this purpose men were sometimes left in these islands, to make observations during the winter. The wretched fate that generally attended these adventurers, at last induced the States-General totally to relinquish the attempt.

Here we fell in with some *streams* of ice, which we went through in search of seals; but of these we saw very few, and got none. Spoke a brig from Bergen. 15th, One sail in sight.

On the 16th we were encountered by a violent storm from the north; and after running, as near as we could calculate, about fifty leagues in a south-westerly direction, we were met by a great number of birds; this clearly shewed us to be at no great distance from land, and had we continued under the same course, we perhaps would soon have fallen in with Iceland; here, however, we lay-to under close reefed top-sails, till the weather moderated, and on the 17th we sailed in a north-east direction. The weather at this time was so hazy that we could not take an observation; and after a gale, and lying-to, not much reliance can be placed on the reckoning by account.

I may here remark, that top-sails are now generally reckoned the best sails for a ship to ly-to under. They are not exposed to accidents from becalming in a heavy sea; and, from their height, they have more power to steady the ship, than a sail of treble size nearer the deck: top-sails used for lying-to should be made of stouter canvass than usual.

22d, The Greenland fleet in sight.

23d, Eighteen sail in company. Lay-to about three quarters of an hour to get some fresh water ice, which is known from that of salt water by its crystalline transparency, the other being very opaque. We occasionally brought large pieces of it on board in a boat, which were piled upon the deck to serve as water for the use of the men, and had also a hogshead filled with it for the tea-water in the cabin.

24th, Several showers of snow. To-day we passed that solitary spot called Bear, or Cherry Island, in Lat. 74° 30′ N. Long. 19° 5′ E. The surface of this island is mountainous, craggy, and dreary in its aspect; exhibiting in some places a scene of black, stupendous precipices; and in others lofty eminences covered with snow.

The ears of people approaching this island are incessantly assailed with the sounds of the impetuous waves dashing against the rugged shores; the crashing collision of floating ice; the discordant notes of innumerable birds; the barking of arctic foxes; the snorting of walruses*, and the dreadful roaring of the polar-bears.

The currents near the island are remarkably rapid, which renders it impracticable to cast anchor within two miles of it, where soundings can be had in twenty or thirty fathoms. Vid. Forster, p. 329.

In 1604, this island was visited by a ship commanded by Stephen Bennet, who, in this and many succeeding voyages, killed prodigious numbers of sea-horses, or walruses. He discovered also abundance of lead ore under a mountain, (by him named Mount Misery, from its truly wretched and forlorn appearance,) of which he brought upwards of thirty tons home to England. Here are also found coals of an excellent quality, and very fine virgin silver of different forms. Vid. Forster, p. 332.

Near to Cherry Island is a small spot called

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* These animals have been found here, lying huddled together, a thousand in a heap.

Gull Island, on which were likewise found several veins of lead ore and coals.

25th, Clear weather, and hard frost.

26th, Clear weather, and a considerable quantity of ice.

27th, Some snow; ice increasing.

28th, At ten A. M. the ship was made fast to a large Iceberg, the lowest part of which was about ten, and the highest forty feet from the surface of the water. Its circumference was considerable.

These floating mountains of ice, to which Dutch navigators have given the name of Icebergs, and which are of all different magnitudes, are originally formed on land. The sun, even in those high latitudes, has a considerable power in melting the snow on the mountains, which, running down into the valleys, and again congealing, segments frequently break off from the entire mass, and fall into the sea. The ice of which these floating masses are composed, is of various colours. The original fresh water ice is sometimes incrusted with that formed from the sea-water, and this again is covered with new ice formed of fallen snow. The different positions of the spectator relatively to the incidental rays of light, varies likewise the seeming hue of the whole. In some parts it emulates the vividness of the emerald, and in others, the most beautiful sapphire. When the Iceberg is totally composed of melted snow which is sometimes but partly the case, the refraction of the solar rays is the most beautiful; and the appearance of those floating mountains on the side opposite the sun, presents such a blaze of light, intermingled with different glowing tints, as totally to baffle description.

" Frost," says the eloquent Pennant, " sports with these Icebergs, and gives them majestic as well as other singular forms. Masses have been seen, assuming the shape of a Gothic church with arched windows and doors, and all the rich drapery of that style, composed of what an *Arabian* tale would scarcely dare to relate, of crystal of the richest sapphirine blue; tables with one or more feet; and often immense flat roofed temples, like those of *Luxor* on the *Nile*, supported by round transparent columns of cerulean hue, float by the astonished spectator."

I have not unfrequently seen floating masses of ice which had evidently been formed of drifted snow, since they wanted the compactness and solidity of those formed by the melting of the snows. Many of these contained trees, and (as there are no trees in Spitzbergen) must have been originally formed in the northern parts of Russia or America, and, being carried by the rapid rivers of these countries into the ocean, has drifted into these latitudes. These trees have often the appearance of being burnt at the ends; and Olafsen mentions, that the violent friction which they frequently experience, occasionally sets them on fire, and exhibits the extraordinary phenomenon of flame and smoke issuing from this frozen ocean. —*Malte Brun*, tome v. 241.

Between one and two o'clock this morning, I was much entertained by the sun darting his rays through the cabin windows.

30th, Cast off from the Iceberg, and endeavoured to force our way through the ice in a northern direction, till it became so thick and close around us, that we were forced to make fast to another large Iceberg, where a small part of the surface of the water was free from ice.

May 1st, In the morning about twelve or one o'clock, the Garland was put upon the main topgallant stay by the last married man, as is usual among the Greenland ships. It is formed by the crossing of three small hoops in the form of a globe, and is covered with ribbons, &c. The crew on this occasion blacken their faces with a mixture of grease and soot, and dance round the decks, their chief musical instruments being frying-pans, mess-kettles, fire-irons, &c. This rough mode of festivity they coutinued till the Captain ordered them a plentiful allowance of grog. After regaling themselves with the very acceptable donation of their commander, they washed themselves, and began to coil away the boat lines, and prepare for the fishing. In every boat there is a line 720 fathoms long, to the end of which is fixed a harpoon about eight feet five inches long; the iron part is better than two feet long, and is extremely sharp. On each side of the point is placed a barb, or wither, diverging from the harpoon at an angle of nearly forty degrees, to prevent the instrument from flinching and losing its hold. There are also several lances, or spears, about six feet long, the points of which are about two inches broad: by these the whales are killed after being struck with the harpoons.

A boat's crew consists of a harpooner, a boat-steerer, a line-manager, and three or four men, more or less, according to the size of the boat.

2d, Cast off, and made for a large Iceberg, one mile to the east, to which we made fast, and were soon after closed in by the ice. This Iceberg was twenty feet high, and mostly composed of fresh water ice. We had not been above two hours in this situation before a strong gale cleared away the ice, and we discovered South Cape in Spitzbergen, bearing north east, distant thirty miles.

May 3d, Sailed for Charles Island on the west coast of Spitzbergen, the most southern part of which is in latitude 78°.

We were much impeded in our course by ice, which, according to the Greenland phrase, was very *rank* around us. The ship struck occasionally on masses of considerable size, to the no little surprise of those sailors who were making their first voyage hither. We had this day a piece of fresh beef cooked for dinner, which we brought from England; it tasted as well, and was as full of juice as if newly killed: as did all the fowls which we got at Shetland: These were hung by the legs to a rope upon the quarter-deck; but neither plucked nor gutted. Our eggs likewise preserved their good taste. This proves the antiseptic power of intense cold.

4th, Intense frost. Ice-bound, with several sail in company.

5th, Strong gales. Unhung the rudder.

6th, The ship towed through very rank ice, by four boats manned by half the crew. Ten sail in company.

7th, Made fast to an Iceberg about seventy yards long and forty broad, and about twenty feet above the surface of the water. It was very much furrowed, and, from its great depth, drifted but little, while the lesser fragments of ice were driven past it at the rate of about two knots an hour.

I had this day a complete proof of the fallacy of the opinion, which maintained that salt water did not freeze. All around the ship, ice was formed on the surface of the water; I observed the spiculæ darting with considerable velocity, and in an immense variety of forms. This ice, when newly formed, is of a bay colour, and when it has attained the thickness of window-glass, is called by the sailors, *bay ice*. It is rough on the surface, and opaque; if the frost be not interrupted by a swell of the sea, or storm, the salt-water ice often extends to an immense distance. It is by the Greenland sailors termed a *field*, when of such extent that the eye cannot reach its bounds. The smaller fragments of salt-water ice are called *seal meadows*, and on them these animals often sport by hundreds.

In storms, large masses of ice are frequently piled on each other, to a considerable height; these are called *packs*, and often assume a very fantastic appearance. The grinding noise occasioned by the collision of those huge masses of ice against each other, and against the ship, not only fill the mind of the auditor with a degree of horror, but for a considerable time deprives him of the sense of hearing.

Storms in those seas are so extremely dangerous, that the most powerful pens could convey but a faint representation of their horrific sublimity. The fury of the ocean is but the least of the enemies the sailor has to contend with. If the ship, during a storm, should be encircled by ice, there is hardly a possibility of avoiding impending fate.

8th, Discovered the south point of Prince Charles' Island, bearing east, distant six leagues.

On the 11th, we made Fair Foreland, or Vogel Hook, the northern extremity of Charles' Island, and on the 13th, we reached the southern extremity of the westernmost cape, forming Cross-bay in Spitzbergen, at a short distance from which, we were made fast to a large Iceberg.

Spitzbergen is a general appellation given to a vast assemblage of frozen islands, lying between South Cape, in 76° 30′, and Verlegan Hook, in 80° 7′ north latitude. Its greatest breadth is from the westernmost part of Mauritius, or Amsterdam Island, called Hackluyt's Headland, to the extreme east point of North-Eastland, comprising from 9° to nearly 24° east longitude.

The inhospitable nature of this frozen climate has prevented Spitzbergen from being properly explored. The best charts that have been published are extremely defective, and its larger divisions are but imperfectly defined. It could nowise interest the reader to peruse a dry catalogue of headlands or straits; and a few general observations may suffice to exhaust all that is interesting in its appearance.

The general aspect of this gloomy and sterile country, affords a scene truly picturesque and sombre. The shores are rugged, bold, and terrific, being in many places formed by lofty, black, inaccessible rocks, some of which taper to exceedingly high points, and are altogether bare, and almost destitute of vegetation. The entire face of the country exhibits a wild, dreary landscape, of amazingly high* sharp-pointed mountains, some of which rear their summits above the clouds, and are capt with strata of snow, probably coeval with the creation of the world.

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* The altitude of one near the Black point, south end, was found, by the megameter, to be 1503 yards. Phipps' *Voyages*, p. 87.

"So Zembla's rocks (the beauteous work of frost),
Rise white in air, and glitter o'er the coast:
Pale suns, unfelt, at distance roll away,
And on th' impassive ice the lightnings play;
Eternal snows, the growing mass supply,
Till the bright mountains prop th' incumbent sky;
As Atlas fix'd each hoary pile appears,
The gather'd winter of a thousand years."

The mountains of Spitzbergen have been observed, by voyagers, to decline in altitude towards the east; neither are the eastern mountains so black, steep, or naked, as those more to the west. This curious phenomenon is considered by some naturalists, as a general law of nature. The mountains here are totally composed of one entire and single mass of granite. The only fissures discovered in their vast extent, are formed by the intensity of the frost rending them asunder. They burst with a noise like thunder, and often huge fragments are torn from the summits, and rolled with great impetuosity to the base.

The glaciers are the most astonishing of all the natural phenomena of this country. It would only convey a faint representation of their size and magnificence, to say, that they far surpassed those of Switzerland. Travellers who have been in both countries, declare there is no comparison between them. Perhaps the most proper method to form a just conception of their magnitude, is by considering the size of the Icebergs, which, as previously stated, are fragments of them. One of these masses, according to Phipps, has been found grounded in twenty-four fathoms water, while it towered above the surface to the height of fifty feet. Almost every valley can boast of its glacier, some of which vie with the mountains in height. They are occasionally hollow, and immense cascades of water are precipitated from them.

The magnificence of this scene, it is impossible to describe. The gloomy silence of the surrounding country, the hoarse noise of the water dashing from an immense height, and the magnificent effect produced by the reflection of the solar rays, form a *tout-ensemble* which can only be faintly conceived.

Though the mountains of Spitzbergen consist generally of rocks of primary formation, it is not altogether destitute of those of a later origin. Captain Phipps discovered several species of marble, which dissolved readily in muriatic acid. On the east side of the country, potters' clay and gypsum have been found, and different specimens of talc, mica, and lapis olearis, are to be met with. Phipps did not perceive any metallic ores in this country, nor, as far as I know, have other voyagers discovered any. The interior of the country, however, has been very little, if at all, explored, and it would, therefore, be wrong to conclude against their existence from this circumstance, more especially, as they are said to be found in Greenland.

Solid as the rocks of this barren country are, their disintegration has gone on to a considerable extent. The combined effects of cataracts, formed of melted snow, of frosts, and tempests, are at once perceived in the quantity of grit, or coarse sand, worn down from the mountains. This sterile substance, (the only thing among the rocks resembling soil,) is somewhat fertilized by the putrified *lichens*, and dung of wild birds.

No fountains, or springs of fresh water, are to be found here ; frost arrests the watery fluid in its course, and prevents it from ascending to the surface. The cascades falling from the glaciers, are solely formed of melted snow, and with this only the navigators can be supplied.

This inhospitable climate is not entirely destitute of vegetation ; some plants are found, which brave the rigour of perpetual frost, and convey some faint representation of a more southern country. They are generally short, crabbed, and have a wretched appearance. The *Salix herbacea*, (dwarf willow,) the most vigorous of them all, scarcely rises two inches from the ground. Among the few herbs, the *Cochlearia*, (scurvy grass,) deserves the first rank, as being the providential resource of distempered seamen. Here are also found several species of *Lichen*, (liverwort,) *Saxifragia*, *Ranunculus*, *Bryum*, and a few others, of little or no use in the medical world.

On the west side of Spitzbergen, there are some safe harbours and roads for ships. The sea near the shore, is, for the most part, shallow, and the bottom rocky; but it often suddenly deepens to some hundred fathoms, where the lead sinks in soft mud, sometimes mixt with shells. In Smeerenberg, which has a sandy bottom, vessels may ride in thirteen fathoms water not far from the shore, where they are sheltered from all winds.

The tide, from the number of islands through which it passes, flows very irregularly, in some places only three and four feet.

Mr. Marten has affirmed, that the sun here, at midnight, appears with all the faintness of the moon; but his assertion has not been corroborated by the experience of subsequent voyagers. During my stay in this country, in 1806 and 1807, distinction between day and night was almost completely lost. Any perceptible difference between the splendor and radiance of the mid-day and mid-night sun, in clear weather, (if these expressions may be used) arose only from a different degree of altitude. Some of our most experienced Greenland sailors, when called upon deck, have frequently asked me whether it was day or night; and I have often seen them obliged, even in clear sun-shine, to consult the quadrant on this head. I may add, that Captain Phipps has also contradicted Mr. Marten in the most positive manner.

The temperature here is extremely fluctuating. Sometimes the heat is so great as to melt the pitch on the decks and cordage of the vessels, and in a few minutes after, succeed high winds, snow, and frost. The sky, even in calm and serene weather, is covered with dense white clouds, the repositories of the snow so often falling.

The degree of heat experienced in these northern latitudes, being so much greater than is experienced in the same latitudes in the southern hemisphere, is supposed to proceed from the greater quantity of land in the north reflecting the rays of the sun, which in the south are absorbed by the ocean. Whatever hypothesis may be adduced to account for the greater temperature of the north, the fact itself is indisputable. Terra del Fuego, situated only in fifty-five degrees south latitude, is extremely cold; and Captain Cook could not penetrate farther than the seventy-first degree of latitude, a distance far short of what the Greenland ships are every year in the habit of sailing towards the other Pole.

Thunder and lightning are unknown at Spitzbergen, or at least are extremely rare. Forster supposes, that the electric exhalations in a country, so much covered with snow, must be very few; and these so much consumed by the frequency of the *Aurora Borealis*, that there is never collected at one time a quantity of fluid sufficient to produce thunder and lightning. That luminous appearance, so often observed during a storm in this country, he alleges to be the effect of volcanic eruptions; though this, I confess, seems to me extremely problematical. Vid. Forster's *Hist. Voyages*, p. 486.

There is a great diversity among the accounts given by different travellers, of the forms assumed by the new fallen snow in this country. During hard frost, I always observed that the flakes closely resembled an asterisk with six points. As the temperature varied, their appearance was changed, which may, perhaps, serve to explain the differences alluded to.

The one summer day of Spitzbergen continues from about the middle of May to the middle of October, when the sun bids a long adieu to this northern region. The horrors of winter are discovered, not alleviated, by the splendor of the *Aurora Borealis*, and the pale lustre of the moon.

Here, says the energetic Thomson,—

> "Here winter holds his unrejoicing court;
> And through his airy hall the loud misrule
> Of driving tempest is for ever heard;
> Here the grim tyrant meditates his wrath,
> Here arms his winds with all-subduing frost;
> Moulds his fierce hail, and treasures up his snows,
> With which he now oppresses half the globe."

Spitzbergen has no settled inhabitants. It is, however, resorted to by parties of Russians, who, in turn, continue there throughout the year for the purpose of hunting, which they practise in all weathers. These hardy adventurers have erected huts adjacent to several of the harbours and bays, and are well provided with fuel, from the immense quantities of drifted wood that is every where to be found in the different creeks. Archangel supplies them with dried fish, rye-meal, and an abundant supply of whey, similar to, if not made in the same manner, as the Shetland beverage. This last constitutes their chief drink, and is likewise used in baking their bread. Their beds are principally composed of skins of the animals which they kill, and of these they also make garments, which they wear with the fur side next their bodies. The walruses and seals afford them a plentiful store of their favourite delicacy, *train-oil*, and the bears, deers, and foxes, fall frequent victims to the dexterity of these excellent marksmen. They are at liberty to return to their native country towards the latter end of September, if not relieved by a fresh party before that time. Some of these Arctic hunters came on board our ship, and when set down to meat, they preferred a mess of biscuit and whale-oil to all the dainties placed before them. Of this coarse repast they eat with a sufficiently healthful appetite, and in their own language pronounced it good. They had the complexion of Siberians, and were dressed in bear and deer skins. They had an athletic and vigorous appearance, though somewhat stiffened and cramped by the extreme cold to which they are exposed. During the time they were on board, and particularly while at meat, they behaved with a decorum and gentleness which could hardly be expected from their grotesque appearance: and the neatness of their fowling pieces, boat-tackling, &c. manifested a taste and ingenuity of which the inhabitants of a more refined country need not be ashamed.

The zoology is the only remaining subject of importance in the description of this country to be here considered. After giving an account of the bear, deer, and fox, I shall notice the seal and walrus, and conclude with describing a few of the birds. Afterwards I shall give a short history of its discovery; and then pursue the account of our voyage.

The *Ursus maritimus*, or Polar bear, may with great propriety be termed the sovereign of the land animals of Spitzbergen, or even of the Arctic circle. Unlike the lion of Africa, his dominion is not confined solely to the land; for by means of the ice, he extends his ravages far from any continent, and disputes the supremacy of the ocean with the walrus himself, even in his own element. Here, says the poet just quoted,

———" The shapeless bear,
With dangling ice all horrid, stalks forlorn;
Slow-pac'd, and sourer as the storms increase,
He makes his bed beneath the inclement drift,
And with stern patience, scorning weak complaint,
Hardens his heart against assailing want."

The Polar bear is the largest of the species, and has frequently been found of an immense size. Barentz killed one thirteen feet in length, and it is asserted they have been found of a much larger size, but not on equally good authority. The one which Captain Phipps describes, was only seven feet one inch long, and the largest we got on board did not exceed seven feet six inches; though we killed one apparently much larger, but a gale coming on, we were obliged to bear away, and leave it on the ice.

The hair of this species is very long, woolly, and of a yellowish white colour. Its teeth lock into each other like those of a rat-trap, and are so remarkably strong and sharp, that it has been known to shiver lances made of steel. Its head is small, and a good deal elongated; nose black, and without hair; ears short, erect, and rounded; neck slender. Its limbs are of a vast thickness, and each foot is armed with five exceedingly strong black claws. The carcase of the one mentioned by Captain Phipps, though without the skin, head, and entrails, weighed 610 lbs. The flesh is white, and though of a coarse texture, is prized by some as equally delicious with mutton, especially when boiled; for when roasted, it is of an oily taste. The liver, it would seem, is of a poisonous nature, as some Dutch sailors who ate part of one were taken so extremely ill, that after recovering, the skin all over their bodies fell off in scales.

The fat makes good train oil, and that which is procured from the feet is sometimes used in medicine, and is commonly known by the name of bear's grease. In some upwards of a hundred pounds of fat has been got, and Captain Fox is said to have killed one which yielded forty-eight gallons of oil. Forster's *Hist. Voy.* p. 363.

The skins are imported into Britain chiefly for covering coach-boxes. In Greenland the inhabitants use the flesh and fat as food; and of the skins they make seats, boots, shoes, and gloves; the tendinous parts they split into fibres for the purpose of sewing.*

The food of the Polar bears consists chiefly of fish, of seals which they seize when sleeping, and the carcases of whales, walruses, &c. so often found floating in the northern seas. On land they prey on the rein-deers, young birds, and eggs; and sometimes lay hold of the Artic fox, notwithstanding all his stratagems in order to escape. Some naturalists have maintained, that the Polar bear chiefly delighted in human flesh; this, however, is expressly contradicted by Fabricius, who, from his long residence in Greenland, must be allowed to be an unexceptionable authority. It will not prey on man, says he, unless pressed by hunger, and it deserves to be mentioned, that the Greenlanders feign themselves dead when they wish to avoid the pursuit. It cannot, however, be denied, that when attacked, or hungry, they are extremely dangerous to man. Many well authenticated instances are to be met with of the courage with which they have attacked the crews of boats, or even of ships. The following is one of the many: "A few years since, the crew of a boat belonging to a ship in the whale fishery, shot at a bear at a short distance, and wounded it. The animal immediately set up the most dreadful yells, and ran along the ice towards the boat. Before it reached it, a second shot was fired, and hit it. This served to increase its fury. It presently swam to the boat; and in attempting to get on board, reached its fore foot upon the gunwale; but one of the crew having a hatchet, cut it off. The animal still however, continued to swim after them, till they arrived at the ship, and several shots were fired at it, which also took effect; but on reaching the ship it immediately ascended the deck; and the crew having fled into the shrouds, it was pursuing them thither, when a shot from one of them laid it dead upon the deck." Vid. Bewick's *Hist. Quadrup.* 6th edit. p. 296.

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* Fab. *Faun. Groenland.* edit. 1780, p. 24.

The walrus is the most dangerous enemy the bear has to contend with, and his immense tusks often give him a decided superiority. What the bear, however, wants in strength, he supplies by cunning, as he takes huge fragments of ice in his paws, and dashing them against the head of the walrus, attacks and kills him after he is stunned by these blows. The one and the other often fall in this desperate fray. *

According to Fabricius, their time of parturition is in the winter, and their number of young at a birth seldom exceeds two. At this period, if on land, they make large dens in the snow; but they frequently bring forth in some of those vast caverns, so often found in the huge masses of *packed* ice. Their attachment to their offspring is remarkably great. When mortally wounded, they will take their little cubs under their paws, embrace, and bemoan them with their latest breath.

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* Fabr. *loc. cit.*

Polar bears are equally at home by land and by sea, where they swim with great strength and agility; they also dive, but cannot remain long under water. As if impatient of rest, they are frequently seen passing from one island of ice to another, and are often met with at a great distance from land. They are frequently drifted into Iceland and Norway, where, from the extreme hunger they suffer in their passage thither, they make dreadful ravages among the cattle, but are soon dispatched by the inhabitants, who rise in a body as soon as they learn that one of them has approached their shores. The government of Iceland encourages the destruction of these animals, by paying a prémium of 10 dollars for every bear that is killed.

That these animals are possessed of considerable sagacity, is evident from the account we have given of their combats with the walrus, and may be farther elucidated by the following fact: The Captain wounded one in the side, and immediately the animal, as if conscious of the styptic nature of snow, covered the wound with it, and made off. We did not perceive any blood in its tract.

The sight of the bear is rather defective, but its senses of smelling and hearing are very acute, and compensate for any feebleness in the other.

Some writers have affirmed, that Polar bears lie in a state of torpor through the long winter night, and appear only with the return of the sun; but this is denied by Fabricius, who says, they are equally on the hunt summer and winter. *

The *Cervus tarandus*, or rein-deer, comes next in order. This useful and beautiful animal is found in every part of Spitzbergen. It has long, slender, branched horns, bending forwards, and palmated at the top, and broad palmated brow antlers.

Its body is thick, and rather square; tail short; legs not so long as those of a stag; hoofs large, concave, and deeply cloven; hair very thick, and under the neck long and pendent: before the first coat is shed, it is of a dark cinereous colour, but after that period it changes to white, except a large space round each eye, which is always black. † Some rein-deer are four feet six inches high; and a pair of their horns has been found which were three feet nine inches long, two feet six inches from tip to tip, and weighed nine pounds and three quarters. The horns of the female are less than those of the male, and not altogether of the same form. She has six teats, four of which only give milk.

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* *Tam brumali, quam aestivo tempore occurrit extra praedans.* Fab. *loc. cit.*

† *Hieme etiam barbam album, ut hircus habet.* Fab. *de Cerv. Tarand.*

The principal food of the rein-deer is the *lichen* (or liverwort), which it frequently raises from below great depths of snow by means of its feet and antlers. The female goes about eight months with young, and seldom brings forth more than one at a time. Her attachment to her offspring is remarkably strong.

The rein-deer species do not bound, but run with an even pace, and with considerable rapidity; in running, they make a clattering noise with their hoofs. They swim very well, crossing in their way narrow arms of the sea. Their senses of smelling and hearing are extremely acute; and it has been observed, that they are more cautious when in flocks, than when living in a solitary manner.

The camel is not more useful to the Arabians, than the rein-deer to the Laplanders, and northern Asiatics; it, in fact, constitutes their whole riches; and on this valuable animal they may be said entirely to depend. An attention to rearing and preserving them, forms the sole business of their lives, and to that alone their agricultural economy is confined.

> "The rein-deer forms their riches. These, their tents,
> Their robes, their beds, and all their homely wealth,
> Supply their wholesome fare, and cheerful cups;
> Obsequious at their call, the docile tribe
> Yield to the sled their necks, and whirl them swift
> O'er hill and dale, heap'd into one expanse
> Of marbled snow, as far as eye can sweep,
> With a blue crust of ice unbounded glaz'd."

The *Canis lagopus*, or Arctic fox, is found in all parts of Spitzbergen. Its nose is sharp and black; eyes black, with yellow iris; ears short, erect, round, and almost hidden in the fur; legs short, with the toes furred like those of a hare; tail long and bushy. The male is generally larger than the female; but neither reach the size of the common British fox. In summer, its hair is of a greyish colour, which in winter changes to white, when it also becomes longer, softer, and a good deal thicker than it is in the former period.

The arctic fox is monogamous, and brings forth twice a year, in the months of March and June. It has several pups at a time.

This species feeds chiefly on young water fowl and eggs, and when very hungry, will eat any kind of shell or other fish. In the northern parts of Asia, and in Lapland, they prey on the *leming*, or *Lapland marmont, (Mus Alpinus)* which are often seen there in surprising numbers.

They generally burrow in the ground, but in Spitzbergen and Greenland, where the intensity of the frost renders this impracticable, they lie in caverns, and in the cliffs of rocks, two or three together. They are so remarkably hardy, that the most rigorous severity of winter in these regions, never stops their search of prey. They are excellent swimmers, and are often seen passing from one island to another, especially at the time when bird-nests are to be found. Some zoologists have affirmed, that they are harmless, simple, and easily taken; but Fabricius assures us, that they possess all the wildness and cunning of the *Vulpes*, or fox of these kingdoms. Fabricius says, the Arctic fox has three different kinds of voices.* Its smell is not so fetid as that of the common fox. Its flesh is not only eaten by the Greenlanders, but some voyagers have esteemed it as being good food. Vid. *Phipps*, p. 184.

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* *Vocem habet triplicem: esurientis ejulando; coire volenti clamando, periclitantis murmurando.*

Their skins are of little value in traffic, especially the white furred ones, as the fur easily comes off.

It was formerly supposed that there were two species of Arctic foxes, but this is denied by Fabricius on very satisfactory grounds.

These three quadrupeds constitute the entire of that great division of animals which belong to Spitzbergen. In warmer climes, the species are more numerous; but the individual animals do not there seem to possess more vigour or animation than these are imbued with. The climate of Spitzbergen being an extreme of cold, the animals of a more genial country cannot exist there. These species are indigenous to the regions of frost; cold is their element, and in it alone they thrive.

The amphibious animals come next in order; and as the accounts of them, given by different voyagers and naturalists, are extremely confused, I have been more circumstantial than would otherwise have been necessary.

The *Phocæ*[*] are the most numerous class of animals which frequent Spitzbergen, where they are found in vast numbers. Though the specific characters of each particular tribe are distinctly marked, their general resemblance is, upon the whole, so very striking, that the following observations may be applied to them all indiscriminately. In the scale of nature, the Phocæ hold an intermediate station between amphibia and perfect fish; but nearer the latter than the former. The organization of other amphibious animals, such as the beaver, castor, otter, &c. fits them better for living on the land than the water. In this genus the contrary takes place. The arms and legs of the Phocæ (if we may employ these terms) are wholly enveloped in the flesh of the animal, the hands and feet being alone protruded; these too are webbed, and are instruments evidently more calculated for swimming than moving on land.

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[*] Under this general appellation, I include the seal, walrus, or morse, dugon, &c.

This unaptness of organization is strongly displayed in the painful motion of the animal, which, from the shortness of its legs, has to rest at every step, on its belly, until it prepares for a new advance. Its agility, considering these defects, is indeed astonishing, and is certainly the effect of great exertion.

The eloquent and ingenious Buffon was of opinion, that the Phocæ approached to fish by a still more decisive criterion. "They are the only animals," says he, "who have the *foramen ovale* open, and who can therefore live without respiring, and to whom water is as proper and suitable an element as air." Theoretic views appear to have here led this excellent writer into an error, as it is now well known that the Phocæ cannot remain long in the water without coming to the surface to breathe.

The *Phoca Vitulina*, by the English termed *seal*; and by the French, *phoque*, is the most common species of those animals in the North, and is dispersed with some variety throughout the rest of the Ocean. Its head is large and flat; the teeth strong, and so sharp, that I have seen it bite in two the handspikes with which the men were attempting to kill it; the tongue is forked; and it is well furnished with whiskers around the mouth; has almost no external appearance of ears, but merely an aperture to convey the sound to the *sensorium*; the eyes are small, and have a haggard appearance; the neck thickens as it approaches the shoulder, the thickest part of the animal; from whence the body gradually tapers in a cylindrical form, to the extremity, where the hind legs are placed, between which is a very short tail; the fore paws consist of five fingers, joined together by a membrane, and furnished with very strong cylindrical nails; the hind paws are formed in the same way, except that the fingers are longer than in the fore paws, and that the shortest of them are in the middle, and the longest on the outside of the paw. The length of an ordinary full grown seal is about seven or eight feet; and its thickness at the shoulder four or five. It is covered with short coarse thick hair, which varies in its colour with the different ages of the animal.

The flesh of the seal is of a reddish colour, and is, by the Greenlanders, accounted excellent food. Our sailors esteemed the entrails of a young one which they dressed, as equal to those of a hog. A seal will yield about twelve or fourteen gallons of good oil; their skins are very valuable, serving for covers to trunks, vests, &c. and are now used to a very considerable extent in the manufacture of shoes. The Greenlanders, who depend almost entirely for subsistence on this animal, make their boots, and other articles of dress, as well as the inside of their huts, of its skin.

The seal is a gregarious and polygamous animal. It is never met with at a great distance from land, but frequents the bays and seas adjacent to the shore. It feeds promiscuously on most sorts of small fish, but chiefly on the spawn of the almon.

Fabricius differs from both Buffon and Pennant in asserting, that the seal brings forth but one at a time, while they maintain that it brings forth two[*]. At the time of parturition, it comes on shore, and suckles its young there for about six weeks before it takes them to the water, where it instructs them in swimming. Though naturally timid, the female defends her young with great boldness and spirit; on other occasions they generally place their safety in flight; but I have sometimes seen them throw back stones and pieces of ice on the sailors who pursued them.

Seals delight to lie upon the ice, or on the shore, exposed to the sun;[†] they there sleep very profoundly, and fall an easy prey to the sailors, who dispatch them by a blow on the nose.

Their voice has been not unaptly compared by Buffon to the barking of a hoarse dog; when attacked, they make a more doleful kind of noise.

Pliny expressly states this animal to be of a docile and tractable nature, and in this he is supported by the more enlarged experience of modern times. The seal described by Dr. Parsons[‡] was taught to come out of his tub, and return to the water at the command of its keeper, to stretch out its neck to kiss him, and to perform several other motions.

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[*] Perhaps Pliny has hit the truth, "*Parit nunquam geminis plures.*" *Nat Hist.* lib. 9. § 13.

[†] *Sternunt se somno diversæ in littore Phocæ.* Georg. lib. 4.

[‡] Pennant's *Quadrupeds*, vol. ii. p 272.

Seals have a very delicate sense of hearing, and are very much delighted with music. The Captain's son, who was a good performer on the violin, never failed to have a numerous auditory, when we were in the seas frequented by those animals; and I have seen them follow the ship for miles when any person was playing on deck. This fact was observed by the ancient poets*, and is thus alluded to by Mr. Scott, in his recent poem:

> "Rude Heiskar's seals, through surges dark,
> Will long pursue the minstrel's bark."

These animals, in swimming, *constantly keep the head*, and often the whole body, as far as the shoulder, above the surface of the water. The first I saw was at a considerable distance, and might easily have been mistaken for a man, though it was much liker a dog.

Buffon has already remarked, that this animal had given a foundation to the poetic fiction of the

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* *Apol. Rhod.* lib. 1. *Val. Flac.* lib. 5. lin. 440. *Gaudebant armine Phocæ.*

Nereids in antiquity; and perhaps we may add, to the no less fictitious mermaids of modern times.

The Arctic walrus, or *Trichechus Rosmarus* of Linnæus, the other great variety of the Phocæ, frequents the bays and shores of Spitzbergen in vast numbers, though they are not now found in such quantities as when the Europeans first navigated these seas. The walrus is considerably larger than the seal, being sometimes found eighteen feet long, and twelve round, where thickest* Their characteristic difference, however, consists in the walrus having two very large tusks, or horns, like the elephants, projecting from his upper jaw. These are sometimes found of an extraordinary size, from two to three feet in length, and weighing twenty pounds. The tusks of the Spitzbergen walrus seldom attain this size, because there the animal is generally killed before attaining its full growth. It is only on the northern coast of Asiatic Russia, or where they are not molested by hunters, that such tusks are found.

With the exception of the tusks, the form of the walrus does not differ materially from that of the seal. Head round, with a short nose: mouth small, with strong bristles; small red eyes; short neck; colour variable; rest of the body similar to the seal; but its toes, especially in the hind feet, are much stronger.

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* The largest we caught, was only thirteen feet long and seven round.

The walrus is monogamous, but in other respects its habits are nearly the same with those of the seal. It brings forth its young in the same manner, preys on the same kinds of fish, and, like the seal, ascends the ice, (more rarely the land,) to bask in the sun.

The walrus is a very valuable animal, yielding frequently half a ton of oil, equally valuable with that of the whale. The tusks are said to be more valuable than those of the elephant, as being more compact and hard, and consequently taking a finer polish: the skin, which is nearly an inch thick, is used to cover the masts or yards of ships, where they cross each other, to prevent their being injured by the friction. It was formerly cut into ropes; and Buffon mentions its being used at Paris in the springs of carriages.

The walrus becomes very furious when attacked, and the whole herd join to revenge any injury an individual may have received. If wounded in the water, they will sometimes surround the boat, and attempt to sink her, by striking their tusks against her sides and bottom. Their combats with the bear, their most dangerous enemy, among the lower animals, have been already described *.

The water and air around Spitzbergen abound more with inhabitants than the land; the fish are perhaps not more numerous than the birds, which are there seen in thousands: of these I shall only describe a few of the most curious species.

The *Procellaria Glacialis* or *Mallemukke* of the Dutch, is found in very great abundance in the seas of Spitzbergen, especially in the whale-fishing season. Bill yellow and strong; neck, tail, and under part of the body, white; back, and coverts of the wings, ash; primaries dusky; legs, straw colour.

This bird is carnivorous, and feeds on the blubber of cetaceous fish, and on other dead carcases floating in the sea. They are often seen following whales, especially wounded ones, on whom they pounce at every time of their rising to breathe, and tear the blubber from their back. As soon as the carcase of a whale is sent adrift after the blubber is taken off, it is covered over with these voracious birds, who then make a loud worrying noise. When a fish is alongside the ship, they surround it in vast numbers, and are so eager of their prey, that they suffer themselves to be caught with the hand, and may be knocked down easily by those on the whale, or in the boats.

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* This account is conformable to that given by the greatest number of writers, but Fabricius seems to be of a different opinion as to the ferocity of the walrus. "*Improviso vulneratus infestat; venatore autem prævio fugit.*" Faun. Groenl. p. 5.

Though extremely fetid, the Greenlanders account the flesh of the Mallemukke good food, and eat it either raw or dressed. The fat they burn in lamps.

When caught, the Mallemukke not only attacks with its bill, but spurts the blubber out of its mouth and nostrils in the face of its captor. Their flight is a kind of race along the surface of the water. They build their nests on rugged precipices, and at other times seldom come to land.

*Larus Parasiticus*, or Arctic Gull. Bill dusky, and much curved at the end: crown black; back, wings, and tail, dusky; the rest white. The two middle feathers of the tail are three or four inches longer than the rest. The female is altogether brown. Length about fourteen inches.

The Arctic gull lives almost solely on the fish taken by other birds; to obtain which, it follows and harasses them till they either drop their prey, or vomit with fear; it then devours the residue before it falls into the sea*. The Arctic gull is frequently taken sleeping on the water.

*Anas Mollissima*, or Eider Duck, is sometimes found on the coast of Spitzbergen in vast numbers, especially in winter. Bill black, and somewhat elevated; from the forehead, which is a glossy black, extends a dark purple stripe beyond each eye: neck, body, and tail, a mixture of black and white; legs green. The body of the female is mostly of an iron colour, stripped with black; tail of an ash hue.

This species is about twice the size of the common domesticated duck, and its body is covered over with a thick coat of valuable down.

*Colymbus Glacialis*, or Great Northern Diver.

Head and neck, black; throat and hind part of the neck marked with a semilunar spot of white, and with white streaks, varied with white spots: upper part of the body and wings black, varied with white spots: tail duskish; legs black. Some of them are found three feet five inches long, and weigh 16 lbs.

It makes its nest in the most remote parts of the North, in the islets of fresh water lakes. Each pair possesses a lake. Its sight is keen, flies well, and darting obliquely, drops safely into its nest. When pursued, it saves itself by diving; but when it has young ones, it does not make its escape, but strives to beat off its enemy with its bill.

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* *Faun. Groenl.* p. 104.

*Emberiza Nivalis*, or Snow Bunting, is found in vast numbers at Spitzbergen, and as it is graminivorous, its frequenting a country so ill provided with vegetables, has justly been regarded as a very suprising phenomenon. It is not a large bird, and its colour varies with the season of the year.

As it does not seem necessary to notice the few insects which belong to Spitzbergen, some short account of its discovery is all that now remains for us to treat of regarding it.

The progress of discovery towards the North has been extremely slow. The ancients possessed no accurate knowledge of the countries north of the Rhine, though they made voyages a considerable way beyond that barrier. The accounts of the Hyperborei, as given by Pomponius Mela and Pliny, two geographical writers of great reputation, are perfectly fabulous, and afford an incontrovertible proof of the total ignorance they were in respecting the country they pretended to describe. During the long period of the decline and fall of the Roman empire, the desire of discovering foreign countries, like other liberal pursuits, had totally subsided. In the fifteenth century, however, men awakened from their lethargy, and the voyages of *Columbus* and *Vasco de Gama*, constitute one of the most important epochs in the history of the human race. The spirit of adventure was aroused, and voyagers boldly ventured into hitherto unexplored seas. The English and Dutch navigators of the sixteenth century, envying the glory and wealth acquired by the Portuguese in their voyages to India by the Cape of Good Hope, were seized with the same spirit of adventure, and were fired with the hopes of opening a new rout to those regions, by sailing round the north of Europe and Asia. Though these expectations were disappointed, yet, to this stimulus, the great discoveries made in the North are to be principally ascribed.

The honour of the discovery of Spitzbergen has been long contested between the English and the Dutch. The former claim it from Sir Hugh Willoughby's pretended view of it in 1553; but the land seen by him being in latitude 72°, could not be any part of Spitzbergen, which extends no farther south than 76° 30′. Some writers have supposed, that if what Sir Hugh saw was not a fog bank, it must have been either the island of

Jan Mayen, or some part of Greenland; while others allege, that it was either Nova Zembla, or the island of Kolgow. The English historians have likewise honoured Stephen Burrows with the title of second discoverer of this country in 1556, though he never advanced farther in these seas than the latitude of 70° 42′. The priority of this discovery indubitably belongs to the Dutch, who, under the pilotage of William Barentz, in 1596, not only discovered, but landed on some of the northernmost islands (in lat. 80°) by them named Spitzbergen, or Sharp Mountains.

Barentz, as already observed, in the same voyage discovered Cherry Island, which was by him called Bear Island; but changed its appellation in 1603, when it was discovered by a ship belonging to Sir Francis Cherry of London.

The English began the whale fishery at Spitzbergen immediately after its discovery by Barentz. The nation soon became sensible of the advantages to be derived from this trade, and Parliament gave premiums to the different adventurers. They had a formidable rival to contend with in the Dutch, who long were successful competitors with the English in this traffic.*

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* The Dutch, in the space of 46 years, caught 32,900 whales, the oil and whalebone of which sold for about £ 15,800,000. Malte Brun, tom. v. 298.

In Spitzbergen, as well as in Jan Mayen, sailors have been frequently left to winter, from the same motives, and have generally met with the same fate; some, however, have been more fortunate, and have braved all the rigours of this inhospitable climate. In 1630, eight Englishmen were left here by accident, and, overcoming all the difficulties they were exposed to, by their ingenuity, were next summer found in good health. In 1743, four Russians were left here, and were not relieved till 1749, when three of the number were found alive, who had exhausted, as Pennant observes, all the ingenious contrivances related of Robinson Crusoe.

It is now time to continue the account of the remainder of our voyage, together with the whale-fishing, the great object for which voyages are made to this country.

Having made fast to an Iceberg on the 13th, as before remarked, near the south-west promontory of Cross Bay, we continued in that situation during the 14th, making all the necessary preparations for the fishing, and on the 15th we sailed about ten leagues from the shore in a westerly direction, making about one point towards the south. It blew this day a brisk gale from the east, which was intolerably cold; the wind at that time passes over large fields of ice, and in that climate, is *comparatively* as noxious as it is in Britain. During a fresh easterly breeze, I have found the cold in the cabin so intense, that, notwithstanding we had a good fire, and warm clothing, I have been obliged to put on furred gloves to enable me to hold a book. We this day killed several seals, and might have got many more, but they are not of much use unless the vessel be fitted out for their fishing only. This day we made fast to a large Iceberg, and the latitude, by observation, was nearly 79°.

16th, We were almost encompassed by ice, and remained in the same situation as before.

17th, Remarkably warm. The men were forced to strip in warping the ship, sallying, &c. In warping, the men move from side to side in the boats, to break the *bay ice*, and in sallying, they run from the one side of the vessel to the other, according to the motion, and the command of the person who takes the lead; this facilitates the motion of the ship through the ice. The thermometer this day stood at 41° in the cabin *without fire*. Being exposed to the sun on deck, it got up to 66°, where it remained stationary. On being hung in the shade, it fell to the freezing point.

18th, Continued forcing our way slowly through bay ice; almost no wind. In sultry days, and, indeed, in all weathers, navigators are much harassed in those seas by the fogs; they, however, chiefly occur towards the latter end of summer. They are excessively dense, and at a distance are frequently mistaken for land. In winter, when the cold is intense, a vapour called *fog smoke* frequently arises from the chinks of the ice, which is so acrid as to excoriate the face and hands of those who approach it. We this day observed a *fog bank*, a little to the north-east, which at first we mistook for Hackluyt's Headland, from which, however, we were then at a considerable distance. The edges of these *fog banks* are so well defined, that the most experienced sailors often fall into such mistakes.

20th, Latitude by observation 79° 50′. Sea clear of ice, with a smart easterly breeze. In this parallel of latitude we ran 12° to the west in eighteen hours. This will not appear surprising, on considering that a degree of longitude in this parallel is little more than ten miles.

21, Fell in with a dead fish. This whale had been killed for a considerable time, and was entirely covered with Mallemukkes, and other voracious birds. At a distance it resembled a floating mass of feathers, but on our approaching it, we were almost stunned by the quarrelling noise of these *Harpies*. We brought it along side, and stripped it of its remaining blubber.

22d, After having stripped off the blubber, we sailed north-east; the sea was clear of ice, and the weather serene. A distant view of the Icebergs reflecting the rays of the sun, added an inexpressible beauty and grandeur to the scene. They had all the appearance of illuminated Gothic castles, and realized the magnificence of fairy scenes.

23d, Killed a large whale. This animal, the largest with which men are as yet acquainted, is of that genus of fish termed cetaceous. Some classifiers of animals, because the cetaceous fish breathe by lungs, and not gills, and because they suckle their young, have, by a learned and laughable absurdity, ranked them among *quadrupeds*. It is needless, however, to say, that they want the distinguishing and decisive characteristics of quadrupeds; and hence, though they may correspond with them in some respects, they should assuredly be held to be of a different race.

The common whale, called by Linnæus *Balæna Mysticetus*, has, it is affirmed, been sometimes found 160 feet long. Inthe seas of Spitzbergen and Greenland, however, whales now seldom reach 70 feet, being generally killed before they arrive at full growth. Head of a triangular shape, and nearly one-third of the size of the fish; under-lip much broader than the upper. Have no teeth, but merely laminæ in the upper jaw, similar to those found in the bill of a duck, but more closely set together, and of a black colour. Tongue, in ordinary sized whales, about 18 or 20 feet long; consists of a soft spongy fat, and frequently yields five or six barrels of oil. That article in commerce, commonly known by the name of *whalebone*, is found adhering to the upper jaw, in thin parallel laminæ, usually measuring from 3 to 10 or 12 feet in length; of these there are generally 200 on each side, which are fit for use. The breadth of the largest, at the thick end, where they are attached to the jaw, is about a foot. When the longest of these laminæ measures six feet, the whale is called a payable or size fish; for every one of which that is caught, the captain generally gets three guineas, the surgeon one, the carpenter one, &c. The whalebone is covered with long hair like that of a horse, which not only preserves the tongue from being hurt, but prevents their food from being returned when they eject the water from their mouths. The throat is not more than three or four inches wide; eyes and ears small. In the middle of the head are two orifices, commonly called *blow holes*, through which they eject water to a great height. No dorsal fin; a large one under each eye. Body tapers gradually towards the tail, which is often above 20 feet broad, semilunar, and horizontal in respect to the body. Female larger than the male: her teats placed in the lower part of the belly.

The colour of the whale varies with its age; the back of some being black, of others black and white, and some are all white: under jaw and belly generally white, whatever may be their age. Some old whales have a broad white stripe over their back down to the belly.

Their skin is smooth, lubricated, and about one inch thick. I had a book bound with some of the epidermis, or scarf-skin, which I brought home, but it did not altogether answer the purpose.

Their bodies, immediately under the skin, are covered with a layer of fat, called *blubber*, from 12 to 18 inches thick in large fish. This, in young whales, resembles hog's lard; but in old ones it is of a reddish colour. A large whale will produce 12, 20, and sometimes 25 tons of oil, which now sells at from L.30 to L.40 per ton.

Mr. Scoresby, jun. in a description of the *Balæna Mysticetus*, published in the Memoirs of the Wernerian Society of Edinburgh, gives the following table of the ordinary quantity of oil produced from whales of different size of bones:

| Bone in feet. | Oil in tons. | Bone in feet. | Oil in tons. |
|---|---|---|---|
| 1 | 1½ | 7 | 7 |
| 2 | 3 | 8 | 9 |
| 3 | 3½ | 9 | 11 |
| 4 | 4 | 10 | 13 |
| 5 | 4½ | 11 | 16 |
| 6 | 5½ | 12 | 20 |

"The blubber of a sucker," Mr. Scoresby observes, "when very young, frequently contains little or no oil, but only a kind of milky fluid; in which case, when the animal is deprived of life, the body sinks to the bottom, as also does the blubber when separated from it; while the body and blubber of larger individuals always swim. Though the preceding statement be exceedingly near the truth, yet exceptions occur; for I have known a whale of 2½ feet bone produce 10 tons of oil, and one of 12 feet bone estimated at only 9 tons; but such instances are much rarer than to see one of 2½ feet bone produce 4 or 5 tons of oil."

The *Balæna Mysticetus*, according to Marten and other North Sea voyagers, feeds chiefly upon a species of *vermes*, called *Clio Limacina*, or Sea May Fly,[*] which are found in surprising numbers throughout the Arctic seas. According to Fabricius, the principal food of the whale consists of two different species of sea insects;[†] while Linnæus maintains that they live chiefly on the *Medusa Capillata*, or sea blubber. This last substance, commonly called by Greenlandmen *whale's meat*, resembles frog-spawn, and is frequently seen floating on the surface of the Northern seas.

Mr. Scoresby says, "that he has good reason to believe that the whale feeds chiefly, if not altogether, on the *squillæ* or shrimp tribe; for, on examining the stomach of one of large size, nothing else was found in it; they were about half an inch long, semi-transparent, and of a pale red colour. —I also found a great quantity in the mouth of another, having been apparently vomited by it. When the whale feeds, it swims with considerable velocity under water, with its mouth wide open; the water enters by the fore part, but is poured out again at the sides, and the food is entangled and sifted as it were by the whalebone, which does not allow any thing to escape."

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[*] Phipps, p. 195.

[†] *Cancer pedatus et oculatus.* Faun. Groenl. p. 38.

Their time of parturition is in April, and though they are said to bring forth two young ones at a time,* yet I never saw more than one along with such as we killed. Fabricius says, that, for the most part, they bring forth but one.† The female is frequently taken when endeavouring to save her young one, which is generally killed first by way of stratagem. She then strives to take it away under her fins; but in the midst of these efforts, being overtaken by the boats, she falls a victim to her maternal affection.

The female, during pregnancy, which is about 9 or 10 months, is very fat; and the cub, when excluded, is black, and about 10 feet long. It continues at the breast for a year. To suckle her young, the mother throws herself upon one side on the surface of the water; she is frequently seen carrying it on her back, and when she has occasion to go to the bottom, takes it with her under one of her fins.

Whalebone was formerly an article of great value in commerce, and at one time sold for

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* Br. Zool. Edit. 1769, vol. iii. p. 37.

† Faun. Groenl. loc. cit.

L.600 per ton. It is not now, however, worth a twentieth part of that sum, and is not an object of any attention to the whale fishers. We may remark, that by an old feudal law, the *tail* of all whales belonged to the Queen,* as a perquisite to furnish her Majesty's wardrobe with whalebone. A strong proof of the ignorance that had at that time prevailed respecting this animal.

The flesh of the whale is variously prepared by the Greenlanders, and is used either when newly catched, or when sub-putrid. The skin, tail, and fins, they eat raw; the blubber is used either as food, or in lamps; they dress the intestines like those of the seal. The tendons serve them as thread for nets. The bones serve as timber for roofing their houses, and other domestic purposes; and fishing-rods of the best quality are made from the whalebone.†

The common whale, notwithstanding its magnitude, swims with surprising agility, and generally against the wind. The flat position of its tail enables it to ascend suddenly to the surface of the water to breathe, which it is frequently obliged to do. Whales are very harmless and timid; but when attacked, frequently strike the boats a dangerous blow with their tails, in which their greatest strength lies. About mid-summer, when they begin to couple, they are very wild, and difficult to catch, unless harpooned during copulation,* or when found sleeping on the water.

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* Blackstone, vol. i. p. 223. Edit 1783.

† Compare Fab. de Bal, Myst. with Arrian, Hist. Ind. § 29 and 30.

Their fidelity to each other is said to be very great. Anderson tells us, that having struck one of two whales, a male and a female, that were in company, the wounded fish made a long and terrible resistance; it struck down a boat with three men in it, with a single blow of the tail, by which all went to the bottom: The other fish attended its companion, and lent it every assistance, till, at last, the fish that was struck, sunk under the number of its wounds; while its faithful associate, disdaining to survive the loss, stretched itself upon the dead fish, and shared its fate.

The ancients were not unacquainted with the *Balæna Mysticetus*, though they do not seem to have had any knowledge of its uses. Their acquaintance with the spermaceti whale, found in the Indian ocean, was somewhat more accurate. It is interesting to observe, in the account of

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* *Congreditur corpore erecto, capite supra aquam prominente.* Faun. Groenl. loc. cit.

Nearchus's Voyage, as given by Arrian,[*] the terror of the sailors when they first perceived the blowing of these animals. As soon as this ancient navigator had successfully conducted his fleet past a single whale, he received an applause equal to what he could have expected had he vanquished an enemy's fleet.

Whenever a whale is seen from the ship, one or more boats are sent in pursuit; and if they get close to it, the harpooner strikes it with his harpoon; but should the boat not get near enough for this purpose, he heaves the harpoon at the whale with great skill. As soon as the animal finds itself wounded, it descends, dragging the line fastened to the harpoon after it with such velocity, that one of the crew is constantly obliged to pour water on the stem of the boat to prevent its taking fire by the intense friction of the line. A hatchet is always at hand to cut the line, should it chance to get entangled. A large whale will sometimes run out the lines of two boats.[*] As soon as a whale is *struck*, they hoist a flag, or *jack*, in the boat, which being seen by the ship, the crew all run about the decks crying

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[*] *Hist. Ind.* § 29 *and* 30.

[†] Fifteen hundred fathoms.

"*A fall, A fall;*" as much as to say, "*He's fast, He's fast.*" Immediately all hands, except a few to take care of the ship, get into the boats with great expedition, and repair to the place where they expect the whale will rise to breathe. When it appears, they strike it again, and so on till there are sometimes three or four harpoons fast. When the whale becomes fatigued, and is severely wounded, it throws up water mixed with blood, and immediately the whole boats surround the groaning monster, and dispatch it with their spears. At this moment, the sea, to a considerable distance, looks as if tinged with vermilion. In dying, the noise occasioned by the whale's lashing the water with its tail and fins, is heard to a very great distance.

As soon as a whale is killed, it is towed by the boats to the ship, and being made fast by tackles placed at the nose and tail, is immediately stripped of its blubber. This process is by Greenland sailors termed *flinching*, and is very speedily performed. The harpooners and their assistants cut the blubber into long stripes, which are hoisted into the ship, cut into smaller pieces, and thrown into the hold, from whence they are again brought upon deck to be pared and barrelled up. In *flinching*, the whale is turned round by a tackle made fast to the fins.

The process of paring and barrelling up the blubber, is termed *making off*, and is performed at leisure times when the crew are not engaged in the pursuit of live whales. The blubber being brought upon deck, the fleshy parts are pared off, and it is then placed, piece by piece, on a block, having three iron spikes in the top to keep it steady; here it is skinned by a harpooner, and is then ready for *chopping*. This operation is performed by the boat-steerers, who cut the blubber into pieces of about one foot long, and three inches square at the ends. When it is *chopped*, they push it off the bench into the *speck trough*, placed by the side of the hatchway, having what is called a *lull bag* attached to a hole in the bottom for the purpose of letting down the *chopped* blubber to a tub in the hold. The blubber is afterwards put, piece by piece, into the bung-hole of the casks, which are all fixed for that purpose previous to the vessel's leaving home.

The *Balæna Mysticetus*, notwithstanding its immense size, is exposed to the multiplied assaults of various enemies inhabiting its own element. Of these, the most dangerous is said to be the

*Physeter Microps*, or Black-headed Spermaceti Whale. The voracity of this species is very great. Its ordinary food is the seal; but if it does not find a sufficient quantity of them for its prey, it attacks the common whale, and even the shark, and tears them to pieces. The Sea Unicorn, or *Monodon Monoceros*, is another of the whale's enemies; and it is said that they never meet without engaging in combat. Its immense tusk, or horn, generally gives it a superiority over the whale. Marten gives an account of a combat between the Saw Fish, *Squalus Pristis*, and the Iceland whale, to which he was eye witness. It was extremely dangerous to approach the field of battle, and his observations were therefore made at a distance. The water was greatly agitated, and rose to an immense height, accompanied with a noise that stunned the ears of the hearers. A fog coming on prevented Marten from ascertaining the result of this direful combat; but he was informed by the sailors that the whale was generally vanquished; and that they kept aloof till such time as the Saw fish, eating the tongue, relinquished the carcase, which they made their prey.

A species of crab, vulgarly called the whale-louse, the *Oniscus Ceti* of Fabricius, if not the most dangerous, is perhaps the most troublesome of the whale's enemies. We scarcely took any whales, but had one or two of these vermin fastened to them. The *Oniscus Ceti* is about the size of a small crab, and is covered with remarkably hard scales. Head similar to that of the *Pediculus Humanus*, with four horns, two of which serve as feelers; the other two are hard, curved, and serve as clinchers to fix the animal to the whale. Underneath its chest, the *Oniscus* has two carvers, like scythes, with which it collects its food; and behind these are four feet, that serve it for oars. It has six other clinchers behind, which rivet it so closely to the whale, that it cannot be disengaged but by cutting out the entire piece to which it is joined. The *Oniscus* is jointed in the back like the tail of a lobster, and the tail covers it like a shield when feeding. It fixes itself upon the tenderest part of the whale's body, between the fins, on the sheath, or on the lips, and in this position tears pieces out of the whale like a rapacious vulture.

Dr. Colquhoun gives the following statement of the value of the whale-bone and whale-oil imported into Great Britain in the following years:

| | |
|---|---|
| 1805 | £663,535 |
| 6 | 608,206 |
| 7 | 521,240 |
| 8 | 544,567 |
| 9 | 500,715 |
| 10 | 566,967 |

24th, Latitude at midnight, by observation, 81° 12′ 42″. Longitude, as near as our incorrect instruments would permit ascertaining, 12° 42′ E. Sea pretty clear of ice, with a considerable swell.

25th and 26th, Continued cruizing near the ice in search of whales, and were fortunate enough to capture three, two of which were size fish.

28th, Latitude, by observation, 81° 50′. Sea almost quite clear of ice, with a great swell; weather serene. Had our object been the making of discoveries, there was not *apparently* any thing to have prevented us from going a good way farther to the north; at least we did not perceive any large fields of ice in that direction; though it is more than probable we should have very soon fallen in with them. We were a little farther north than Captain Phipps, who ran a great risk of being locked up entirely by the ice. He was, in fact, ice-bound from 31st July to 10th August, and during that time the packed ice rose as high as the main-yard. The want of ice in that place where we then were, was perhaps owing to the effects of some late gale clearing it away. The great swell in the sea appeared to indicate this to have been the case.

In my second voyage to this country in 1807, we could not penetrate higher than 78° 30′. A ridge of ice totally prevented our farther progress.

May 29th and 30th. Course nearly E. S. E. towards the Seven Islands. We had on the 30th a considerable quantity of bay ice, and made but little progress. Occasional showers of snow. Saw only one whale.

31st, Tacked to the W. S. W. Ice increasing. Saw several whales. Lay to for fishing. Got a very large whale, which measured 64 feet in length.

During the *flinching* of the whales, there were generally a considerable number of sharks in the vicinity of the vessel. They were principally of that variety termed *Squalus Pristis*, or Saw Fish. At this time, one more voracious than the rest, approached close to the side of the whale's carcase, and seized a large piece of blubber, which was ready to be hoisted on board. Before he could make his escape, however, he was struck by a harpoon, and, his flight being thus obstructed, he was attacked with spears: a tackle was immediately fastened to his jaws, and being hoisted on deck, his belly was ripped open, and the blubber recovered. The carpenter, too, stripped a considerable quantity of skin from his tail. Notwithstanding this rude treatment, he was no sooner let down than he swam away with great agility.

The *Squalus Pristis*, or Saw Fish, is often found upwards of 15 feet long; with sword-shaped bony snout, nearly one-third the length of the fish, and denticulated on both sides; mouth placed beneath the anterior part of the head; jaws furnished with several rows of teeth; habit rather slender; body convex above, and somewhat flattened beneath; skin rough; colour greyish-brown above, paler beneath.

June 1st, Continued in the same situation, being almost ice-bound. Sent out the boats after a whale, which made its escape below the ice after being struck; the lines of course were lost. The harpoons are marked with the names of the ship and captain, and if a whale that has been killed by one ship be found by another, she is obliged to deliver up a certain portion of the blubber to the former.

From June 1st to June 7th, the weather was, upon the whole, pretty good, though the squalls were very frequent, accompanied by dense showers of snow. The rigging, by this time, had assumed a very strange appearance, at least what would be deemed as such by a more southern' sailor. The ropes were frequently increased to double their usual size by the incrustations of ice, which had to be beat off by handspikes to allow them to pass through the blocks. The decks were every now and then besprinkled with saw-dust and sand, to counteract the slippiness arising from the combined effects of frost and grease. The cabin-floor, too, was covered with saw-dust, and the crew kept some of it in their pockets to clean their hands. In this space of time we catched five fish of different magnitudes.

During the time we were in those high latitudes, our compasses, five in number, varied widely from each other; but this is known to happen to all compasses, according as they are placed in different parts of the ship. That which was kept in the cabin varied the least. This may perhaps tend to confirm the opinion of some navigators, who have maintained that the polarity of the needle is injured by intense cold. The notion of the variation decreasing as the distance from the Pole diminishes, does not appear to have any foundation. According to Captain Phipps,

| | | |
|---|---|---|
| In Lat. 78° 22′ N. | Long. 9° 8′ E. | Mean var. was 14 55 |
| 79 50 | 10 2 | 20 3 |
| 80 30 | 15 4 | 11 56 |

On referring to the Appendix, it will be seen that the variation, as observed in the Sybyll, in Lat. 78° 11′, Long. 6° 55′ E. amounted to 19° 6′. And by the same excellent observations, combined with those of Captain Flinders, it is proved that the variation depends more on the *ship's course,* than on any thing else. It is much to be regretted that Captain Phipps did not mention the course his ship was under when he made his observations on the variation. As they stand at present, they want the most essential element.

8th, Latitude by observation, 79° 42′. Sea nearly clear of ice. Course W. S. W. ½ S. At seven P. M. we discovered Hackluyt's Headland, bearing E. N. E distant four or five leagues. The weather was hazy, and we had but an indistinct view of this black precipitous promontory. Saw several whales, but got none.

June 9th, Intense frost. Observed the freezing of salt water. Shot two seals, one of which only we brought on board.

16th, Stood in nearer the shore to the south of Hackluyt's Headland. Several of the sea-unicorns were here observed at no great distance from the ship. I noticed two which passed close under our stern, that had double horns of a considerable size. The unicorns make a great noise in blowing, and, when at a distance, are often mistaken for whales. We fired several shots at them, and mortally wounded a small one, which we brought on board. It measured $9\frac{1}{2}$ feet in length, and its horn was four feet one inch.

The *Monodon Monoceros*, *Narwhal*, or Unicorn Fish, has been found 22 feet long, and 12 round. Head nearly one-fourth the length of the body, round, small, and terminates in an obtuse rounded snout. Mouth small; no teeth, but a large wreathed tusk or horn. Sometimes two[*], and often 10 feet long, proceeds from its upper jaw, diverging to one side, and tapering gradually towards the tip. Eyes and ears very small; one respiratory orifice in the back part of the head; back broad, convex, and tapering towards the tail, which is horizontally placed, and is divided into two obtuse oval lobes. Body of an ovoidal shape; no dorsal fins, but a high ridge or projection, extends from the blow-hole to the origin of the tail,

[*] There is at the Stadthouse at Amsterdam, the skull of a Narwhal, with two horns. There is likewise a skull to be seen in Hamburgh, having two horns, each above seven feet long, and eight inches round.

and gradually diminishes in height as it approaches the tail: two pectoral fins; colour generally cinerous, dappled with numerous multiform black spots; belly a shining white, and soft as velvet to the touch.

Naturalists differ greatly as to the food of the unicorn. Perhaps it differs with the parts of the ocean it inhabits. Small fishes, *Molusca* and *Actinea*, are their more general food.

The Narwhal swims with great swiftness, and, like the other cetacea, cannot remain long under the water without respiring. When frightened, or attacked, they huddle together in such numbers that they force their long horns into the body of each other, and thereby become an easy prey to their pursuers.

This animal, though seemingly harmless, is, as already mentioned, a dangerous enemy of the common whale; and has been known to dart its horn into the side of a ship*. The vessel must have sunk had not the horn been broken off by the violence of the stroke.

The oil produced by the *Monodon Monoceros*, though scanty, is, in point of quality, superior to any other cetaceous oil.

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* Forst. Voy. p. 253.

The horn of the Narwhal was long the object of a kind of superstitious respect. It was said to be efficacious in the cure of several distempers; and was prized as being of the very highest value. The Margraves of Bareuth possessed one which cost them 600,000 rix dollars; and the kings of Denmark have a most magnificent throne formed of these horns, which is esteemed more valuable than if composed of gold. Captain Scoresby (of the Resolution,) has a very fine bed made of the same materials. It is reckoned a great curiosity, and is extremely handsome. The horn is of a finer texture, and takes a better polish than that of the elephant.

11th, Got two fish. Several sail of Greenlandmen in company.

12th, Strong easterly breeze. Ran a considerable way to the westward.

13th and 14th, Gale increased, and we ran a considerable way farther to the westward. Cold very intense.

June 15th, Latitude, by obervation, 78° 13′. Made fast to a large Iceberg.

16th, Got a size fish. While we were made fast to this Iceberg, some of the crew had put a piece of blubber to the fire, and, allured by the smell, a very large bear came and put his nose over the gunwale. One of the harpooners shot him; but a squall coming on, we did not bring the carcase on board.

From the 16th to the 21st, we caught four whales, of various sizes. The weather was now getting hazy, as it generally does at this season of the year, and the whales were become more difficult to catch.

22d, Spoke the Catharina Elizabeth, of Hanover, Captain Schultz, after being a considerable time separated from the rest of the Greenland ships. From her we learned that a French frigate, and some smaller vessels, were in the North. This intelligence determined us not to lessen our distance from Spitzbergen, but to shape our course to England by the Feroe Isles. This determination, however, had nearly sent us to a French port, for the Guerriere was taken off the Feroe Isles on the 19th July, two days after we passed them.

From the 22d to the 29th, the day on which we set sail for England, we took six whales, making in all twenty four, of which fourteen were size fish.

On the 26th, an accident happened which was like to have deprived us of one of our boatsteerers; but, fortunately, was not finally attended by any evil consequence. He was thrown out of the boat by the stroke of a whale's tail, but kept himself on the top of the water by his oar. The crew were in such disorder, that before they got him into the boat, he was almost senseless with cold, and still worse before they could row him to the ship. He was brought down to the cabin, stripped, and laid on a blanket before the fire. His hair was like so many icicles, and the body exhibited every cadaverous appearance. No pulsation was to be found in any part, and I held a mirror before his mouth without producing the least evidence of respiration. I immediately ordered the soles of his feet to be rubbed with strong brine; his temples were chaffed with strong volatile spirits, and the same were applied to his nose. Hot flannels, moistened with camphorated spirits of wine, were applied to the spine, and over the breast, and renewed every quarter of an hour. Stimulating powders were put to his nose, but without any apparent effect; he never shewed the least symptoms of animation; nor could the body be brought to any degree of warmth, notwithstanding being rubbed with hot coarse cloths. As the last resource, I ordered one of the men to blow into the patient's mouth, as strongly as he could, holding his nostrils at the same time lest any of the air should escape. When I found, by the rising of the chest, that the lungs were properly inflated, I ordered him to quit blowing, and with my hand pressed down the chest and belly, so as to expel the air. This imitation of natural respiration was pursued for a short time, till putting my hand on his left breast, I found his heart give some feeble beats: soon after, the pulse at the wrist was found to beat. In a short time he opened his eyes, and looked round in wild amaze; then shut them again. As soon as he was able to swallow, I gave him a gentle cordial, which was repeated every five minutes, till he was a great deal recovered. The Captain was so kind as to order him to be put into his own bed, with two of the men, one on each side, to bring him the sooner to a natural heat. Plenty of clothes being put over them, he soon fell into a profound sleep and gentle perspiration, and so remained for two or three hours, when he awoke quite well and refreshed, but had rather a wild look. On giving him a glass of brandy, he arose and went to his own birth as before. All the time I was on board, the poor fellow expressed the greatest gratitude to me, and thankfulness to God for thus being providentially rescued from the grasp of death. It is almost needless to remark, that in this inclement region, swimming is of little or no use to any person who may chance to fall overboard, as his muscular motion is almost instantaneously obstructed by the intensity of the cold.

Colds and coughs are the disorders most prevalent among sailors in this country. Sometimes the scurvy breaks out amongst them, but I never saw any symptoms of it. Fractures, dislocations, sprains, bruises, cuts, and frost-biting, give the surgeons a good deal of trouble. A certain complaint, either contracted in England, or the Orkney, or Shetland Isles, is very common.

The Resolution did not lose a single man in either of the voyages I made to this country. By the blessing of Providence, they were again all safely restored to their native land.

30th, Latitude 76° 37′; Longitude, as near as we could calculate, 1° West. Steered due south. The men were employed in cleaning the ship, drying the lines, &c.

From July 1st to July 5th, course southerly. Weather fine, but hazy. Ice diminishing, and the sun getting gradually nearer the horizon. Saw several whales; they were now become extremely furious, and made considerably more noise in blowing.

Voyagers are, in these high latitudes, often surprised and delighted by the appearance of mock suns and moons, but I was not so fortunate as to perceive any. The frozen particles floating in the atmosphere are supposed to be the cause of these phenomena.

From the 5th to the 7th, wind at N. E. Course S. S. W. Lat. 71° 10′. Greenland ships, from their clumsy make, when heavily loaded, sail with but very little expedition.

July 8th, Strong breeze from E. N. E. Course S. S. W. ½ W. Ice totally gone. Sun almost coincident with the horizon.

From the 8th to the 17th, Excellent weather. Course generally S. S. E. ½ E. On the 17th, we fell in with the westernmost of the Feroe isles. Our dead reckoning was considerably to the east.

The Feroe isles lie 70 leagues N. W. from Unst, in Shetland, and extend to 62° 30′.

Seventeen of these islands are habitable. They are rugged, mountainous, and rocky; the intervening currents deep and rapid; the sea around them turbulent, and at times so much agitated by whirlwinds, that vast quantities of water are forced up into the air, and the fishes contained therein frequently deposited on the tops of the highest mountains. These are equally resistless on land, tearing up trees, stones, and animals, and carrying them to very distant places. Whirlpools too, are numerous in these seas, and extremely dangerous; that near the island of Suderoe is the most noted. It is occasioned by a crater, sixty-one fathoms deep in the centre, and from fifty to fifty-five on the sides. The water forms four fierce circumgyrations. The point they begin at is on the side of a large bason, where commences a range of rocks running spirally, and terminating at the verge of the crater. This range is extremely rugged, and covered with water from the depth of twelve to eight fathoms only. It forms four equidistant wreaths, with a channel from thirty-five to twenty fathoms in depth between each. On the outside, beyond that depth, the sea suddenly sinks to eighty and ninety. On the south border of the bason, is a lofty rock, called *Sumboe Munk*, noted for the number of birds which frequent it. On one side, the water is only three or four fathoms deep, on the other fifteen. The danger at most times, especially in storms, is very great. Ships are irresistibly drawn in: the rudder loses its power, and the waves beat as high as the masts, so that an escape is almost miraculous; yet at the reflux, and in very still weather, the inhabitants will venture in boats for the sake of fishing. *Arct. Zool.* 2d edit. vol. i. p. 56.

On arriving at these southerly latitudes, the appearance of the moon and stars was, to use the language of Captain Phipps, almost as extraordinary a phenomena as the sun at midnight, when we first got within the Arctic circle.

On the 20th, lay becalmed off Fair Isle, a barren spot, about three miles long, situated midway between the Shetland and Orkney Isles, and inhabited by about 170 persons. The shores are high and rugged; greatest depth of the water near it 26 fathoms. The tide here runs with great velocity, and forms at the east end a considerable eddy. Some ships belonging to the famous Spanish Armada were lost on this isle.

When lying off Fair Isle, we sent the men we had got from Shetland ashore in the row-boats.

22d, Passed North Ronaldshaw light in the Orkneys. The wind being but little, and at S. E. we were drifted by the tide down the Murray Frith, or *Tuum Æstuarium* of the Romans, as far as Spey Bay. Tacked, and stood in for Kinnaird's Head, the *Taizalum Promontorium*, which, with the north-eastern extremity of Caithness, forms this capacious bay.

July 23d, Off Fraserburgh, to which we sent letters by a fishing boat. Tacked and stood in for Peterhead, the most-eastern part of Scotland, and famous for its medicinal waters; it is situated about 30 miles north of Aberdeen.

25th, Fell in with a cutter off Saint Abb's Head, which we at first took for a French privateer: to our satisfaction, however, she proved to be the Try-all of London, a privateer of 14 guns, and 70 or 80 men.

26th, Came in sight of Whitby. It blowing very hard, we could not anchor in the roads. Sailed farther to the south; then tacked and hoisted a flag for a pilot. In the evening a pilot came off in his coble; but it blew so remarkably hard, that he could not get any person to come along with him but an intrepid *lame tailor*. They came on board, but being heavy laden, and the tides low, we could not get into Whitby We therefore determined to run for Hull; but calling at Scarborough, we got a brig to come to Whitby roads in order to lighten us.

July 27th, Fourteen of our men being afraid of the press, took two boats and ran into Robin Hood's Bay. Anchored this evening in Whitby Roads.

28th and 29th, The brig lightened us about 100 tons, and the evening of the latter day we got withinside the Bridge, and were mustered by the Custom-house officers, as is usual on those occasions.

31st, Paid off.

In concluding the account of this voyage, it would be unpardonable in me to neglect mentioning the kindness and attention with which I was always treated by Captain Scoresby, and his son the mate. Captain Scoresby is well known to the world at large, for his vigorous, enterprizing character, as well as for consummate skill in nautical matters. As Captain of the ship, his conduct was most exemplary. He was attentive to all the duties of religion, and preserved a proper decorum, and strict discipline, without harshness, among the crew

# APPENDIX.

## No. I.

The following extract from Dr. Edmonston's work on the Shetland Isles, gives a curious account of the popular superstitions still prevalent among their inhabitants. "On no subject are they more superstitious than in what relates to fishing. Some of the more skilful prophets can foretel, from the knots in the bottom-boards of a boat, whether it will be lucky to fish or not; and whether it will be overset under sail, or be otherwise cast away; and boats have been rejected and torn up in consequence of such a prophesy. When they go to the fishing, they carefully avoid meeting any person, unless it be one who has long enjoyed the reputation of being lucky; nor, when the boat has floated, is it deemed safe to turn it but with the sun. If a man tread on the tongs in the morning, or be asked where he is going, he need not go to the fishing that day. When at sea, the fishermen employ a nomenclature peculiar to the occasion, and scarcely a single thing then retains its usual name. Most of their names are of Norwegian origin; for the Norway men were reported to have been successful fishers. Certain names must not be mentioned while they are setting their lines, especially the minister and the cat; and many others equally unmeaning.

"Witchcraft is still believed by the peasantry to exist in Zetland; and some old women live by pretending to be witches, for no one ventures to refuse what they ask. About six years ago, a man entered a prosecution in the sheriff-court at Lerwick against a woman for witchcraft. He stated, that she uniformly assumed the form of a raven, and in that character killed his cattle, and prevented the milk of his cows from yielding butter. The late Mr. Scott, then sheriff-substitute, permitted the case to come into court, and was at great pains to explain the folly, and even criminality, of such proceedings.

"Nearly allied to witchcraft is a firm belief in the efficacy of alms. When a person is anxious for the accomplishment of any particular event, or considers himself in danger, he vows alms to some person, generally an old woman who enjoys the reputation of being provided for in that manner; and, if his wishes are realized, he scrupulously performs his vow. There are the ruins of an old church in the parish of Weesdale, called *Our Lady's Church*, which is supposed to possess a still greater influence in this respect than any living being. Many are the boats which are said to have arrived safe at land in consequence of a promise to this effect, where death, without such an intervention, appeared inevitable. Several coins have been found at different times concealed in the walls of this Loretto of Zetland.

" A belief in the existence of *Brownie*, the tutelar saint of husbandry, is beginning to be exploded; but the fairies or *trows* have still a " local habitation and a name." They occupy small stony hillocks or *knowes*, and whenever they make an excursion abroad, are seen mounted on bulrushes riding in the air. If a person should happen to meet them, without having a Bible in his pocket, he is directed to draw a circle round him, on the ground, and in God's name forbid their nearer approach, after which they commonly disappear. They are said to be very michievous, not only shooting cattle with their arrows, but even carrying human beings with them to the hills. Child-bed women are sometimes taken to nurse a prince, and although the appearance of the body remain at home, yet the immaterial part is removed. Such persons are observed to be very pale and absent; and it is generally some old woman who enjoys the faculty of bringing soul and body together." Vol. ii. p. 73.

## No. II.

In order to make this little work as complete as possible, I have annexed the following accounts of the Dutch, English, and American whale-fisheries. The two former I have compiled from authentic documents, and the latter is extracted from the late valuable work of Mr. Pitkin on the Commerce of the United States.

*Dutch Whale Fishery.*—Towards the latter end of the sixteenth century, the whale-fishing on the coast of Spitzbergen became considerable. It was entirely in the hands of the English till the year 1578. This fishery was first carried on by a company, which sent thither annually a few ships, to the exclusion of the rest of their countrymen, and who also endeavoured to exclude foreigners. In the year 1613, the company's ships amounted to seven sail, who, on their arrival at Spitzbergen, found there fifteen Dutch, French, and Flemish ships, besides English interlopers. Next year, the Dutch sent eighteen sail, of which four were men-of-war. In 1615, the king of Denmark sent a squadron of three men-of-war to assert his exclusive right, but with such indifferent success, that his majesty thought fit to give up the point. In 1617, our company were more lucky than in any other year, and actually made one thousand nine hundred ton of oil. The Dutch made, for many years after, very indifferent voyages; and, as their great statesman M. De Witt, well observes, had certainly been forced to relinquish the trade, *had it not been laid open by the dissolution of their Greenland company*, to which he attributes their having, in his time, beat the English, and almost all other nations, out ofthat trade, which they then carried on to a prodigious extent.

The following is a list of the ships sent from Holland to the Greenland and Davis Straits whale-fishery, from the year 1661 to 1788, both inclusive, with an account of the number of whales catched each year:

*A List of Greenland and Davis' Straits Ships, from Holland, since the year* 1661, *with the number of Fish caught each year.*

| *Years* | *Ships.* | *Fish.* | *Years* | *Ships.* | *Fish.* |
|---|---|---|---|---|---|
| 661 | 133 | 452 | 1693 | 90 | 175 |
| 1662 | 149 | 862 | 1694 | 63 | 161 |
| 1663 | 202 | 932 | 1695 | 97 | 187 |
| 1664 | 193 | 782 | 1696 | 122 | 428 |
| 1665 | War with England, no Ships out | | 1697 | 131 | 1279 |
| 1666 | | | 1698 | 139 | 1483 |
| 1667 | | | 1699 | 151 | 775 |
| 1668 | 155 | 573 | 1700 | 173 | 913 |
| 1669 | 138 | 1013 | 1701 | 208 | 2071 |
| 1670 | 148 | 792 | 1702 | 224 | 687 |
| 1671 | 158 | 1088 | 1703 | 207 | 644 |
| 1672 | War with England, no Ships out. | | 1704 | 130 | 652 |
| 1673 | | | 1705 | 157 | 1678 |
| 1674 | | | 1706 | 151 | 966 |
| 1675 | 147 | 900 | 1707 | 131 | 126 |
| 1676 | 145 | 812 | 1708 | 122 | 533 |
| 1677 | 145 | 785 | 1709 | 126 | 192 |
| 1678 | 120 | 1118 | 1710 | 137 | 62 |
| 1679 | 126 | 792 | 1711 | 117 | 631 |
| 1680 | 151 | 1373 | 1712 | 108 | 373 |
| 1681 | 175 | 876 | 1713 | 93 | 287 |
| 1682 | 195 | 1444 | 1714 | 108 | 1291 |
| 1683 | 242 | 1338 | 1715 | 134 | 698 |
| 1684 | 233 | 1153 | 1716 | 153 | 535 |
| 1685 | 209 | 1283 | 1717 | 179 | 392 |
| 1686 | 189 | 664 | 1718 | 139 | 280 |
| 1687 | 194 | 621 | 1719 | 211 | 346 |
| 1688 | 214 | 340 | 1720 | 228 | 455 |
| 1689 | 160 | 241 | 1721 | 260 | 733 |
| 1690 | 117 | 785 | 1722 | 254 | 1101 |
| 1691 | 2 | War with France. | 1723 | 233 | 314 |
| 1692 | 32 | 56 | 1724 | 232 | 358 |

### *A List of Greenland and Davis' Straits Ships, from Holland, since the year* 1661, *with the number of Fish caught each year.*

| *Years* | *Ships.* | *Fish.* | *Years* | *Ships.* | *Fish.* |
|---|---|---|---|---|---|
| 1725 | 226 | 530 | 1757 | 180 | 423 |
| 1726 | 218 | 244 | 1758 | 159 | 371 |
| 1727 | 202 | 402 | 1759 | 155 | 464 |
| 1728 | 182 | 363 | 1760 | 154 | 454 |
| 1729 | 184 | 229 | 1761 | 161 | 357 |
| 1730 | 168 | 248 | 1762 | 165 | 189 |
| 1731 | 164 | 298 | 1763 | | |
| 1732 | 176 | 314 | 1764 | 161 | 224 |
| 1733 | 184 | 360 | 1765 | 165 | 477 |
| 1734 | 186 | 327 | 1766 | 167 | 189 |
| 1735 | 185 | 496 | 1767 | 165 | 179 |
| 1736 | 191 | 857 | 1768 | 160 | 600 |
| 1737 | 196 | 504 | 1769 | 152 | 1127 |
| 1738 | 195 | 472 | 1770 | 150 | 523 |
| 1739 | 192 | 728 | 1771 | 150 | 143 |
| 1740 | 187 | 665 | 1772 | 131 | 768 |
| 1741 | 178 | 312 | 1773 | 134 | 444 |
| 1742 | 173 | 558 | 1774 | 130 | 450 |
| 1743 | 185 | 937 | 1775 | 129 | 105 |
| 1744 | 187 | 1494 | 1776 | 123 | 509 |
| 1745 | 184 | 568 | 1777 | 116 | 427 |
| 1746 | 180 | 1036 | 1778 | 111 | 306 |
| 1747 | 164 | 776 | 1779 | 105 | 168 |
| 1748 | 94 | 278 | 1780 | 82 | 476 |
| 1749 | 157 | 619 | 1781 | War with England, no Ships out. | |
| 1750 | 158 | 590 | 1782 | | |
| 1751 | 162 | 330 | 1783 | 55 | 330 |
| 1752 | 159 | 546 | 1784 | 62 | 198 |
| 1753 | 166 | 639 | 1785 | 65 | 300 |
| 1754 | 171 | 672 | 1786 | 67 | 476 |
| 1755 | 181 | 720 | 1787 | 67 | 239 |
| 1756 | 186 | 508 | 1788 | 69 | 100 |

**N. B. From the year 1719 are included the Davis' Straits Ships.**

From this period the Dutch whale-fishery pidly declined, and was at length totally annihilated during the late war.

*English Whale Fishery.*—The English Whale Fishery, like that of Holland, was originally carried on by an exclusive company. The first association of merchants for this purpose was soon dissolved; but owing to successive grants of the same kind, the trade continued fettered for a considerable period posterior to the revolution. During this time it was, as might have been expected, carried on with almost no success.—In 1724, the South Sea Company embarked largely in this department of industry; but having, in the course of eight years, incurred an immense loss, they were glad to abandon it. In 1733, the goverment being determined to encourage this fishery, a bounty of 20s. per ton was granted to all ships of 200 tons and upwards, employed therein; as this bounty, however, was found insufficient, in 1749 it was doubled. This extraordinary encouragement, by factitiously determining a portion of the national capital into this channel, had at last a considerable effect; but a long time elapsed ere the English could, even with these superior advantages, successfully compete with the Dutch. Since this epoch many alterations have been made in the laws respecting the Greenland fishery; and, at the commencement of the late war, the bounties were reduced, owing to the market being overstocked with oil.

The following account of the number of English and Scottish vessels employed in the Greenland Whale fishery, and of their tonnage, from 1771 to 1800, both inclusive, is extracted from M'Pherson's Annals of Commerce:

| | England. | | Scotland. | |
|---|---|---|---|---|
| *Years.* | *Vessels.* | *Tons.* | *Vessels.* | *Tons.* |
| 1771 | 50 | 14,700 | 9 | 2,797 |
| 1772 | 50 | 15,378 | 9 | 2,797 |
| 1773 | 55 | 16,712 | 10 | 3,016 |
| 1774 | 65 | 19,770 | 9 | 2,773 |
| 1775 | 96 | 29,131 | 9 | 2,773 |
| 1776 | 91 | 27,047 | 7 | 2,251 |
| 1777 | 77 | 21,917 | 7 | 2,251 |
| 1778 | 71 | 20,291 | 5 | 1,587 |
| 1779 | 52 | 16,907 | 3 | 956 |
| 1780 | 50 | 14,900 | 4 | 1,282 |
| 1781 | 34 | 9,859 | 5 | 1,459 |
| 1782 | 38 | 11,122 | 6 | 1,764 |
| 1783 | 47 | 14,268 | 4 | 1,095 |
| 1784 | 89 | 27,224 | 7 | 2,047 |
| 1785 | 136 | 41,741 | 13 | 3,865 |
| 1786 | 162 | 49,426 | 23 | 6,997 |
| 1787 | 219 | 64,286 | 31 | 9,057 |
| 1788 | 216 | 63,399 | 31 | 8,910 |
| 1789 | 133 | 38,751 | 28 | 7,846 |
| 1790 | 130 | 30,290 | 22 | 5,898 |
| 1791 | 93 | 27,598 | 23 | 6,308 |
| 1792 | 73 | 21,496 | 28 | 5,487 |
| 1793 | 38 | 8,437 | 14 | 3,813 |
| 1794 | 47 | 12,906 | 13 | 3,480 |
| 1795 | 34 | 9,135 | 10 | 2,613 |
| 1796 | 42 | 11,516 | 9 | 2,317 |
| 1797 | 50 | 13,757 | 10 | 2,614 |
| 1798 | 56 | 16,140 | 10 | 2,614 |
| 1799 | 57 | 16,731 | 10 | 2,629 |
| 1800 | 51 | 15,077 | 10 | 2,652 |

From 1788, this table is made up from the annual accounts laid before Parliament; and the number of ships, and the tonnage, always refers to the number of those who actually *cleared out* for Greenland. We have already given Dr. Colquhoun's estimate of the value of the Whale oil and Whale-bone imported into Great Britain from 1805 to 1810.

*American Whale Fishery.*—The whale fishery first attracted the attention of the Americans in 1690, and originated at the island of Nantucket, in boats from the shore. In 1715, six sloops, of thirty-eight tons burden each, were employed in this fishery, from that island. For many years their adventures were confined to the American coast, but as whales grew scarce here, they were extended to the Western Islands, and to the Brazils, and at length to the North and South Seas*. For a long time, the Dutch seemed to monopolize the whale fishery, which they followed, with success, in the Greenland or Northern Seas.

As early as 1663, they had two hundred and two ships employed in this fishery, and in 1721, as many as two hundred and sixty; in 1788, the number was reduced to sixty-nine, and for many years past, not only has this branch of their commerce, but almost every other, been completely annihilated. In 1731, the Americans had about thirteen hundred tons of shipping employed in this fishery along their coast. About the year 1750, the whale left the American coast. The hardy enterprise and activity of the American sailor, however, soon followed him in every part of the Northern and Southern Seas.

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* See Collections of the Massachusetts Historical Society.

From 1771 to 1775, Massachusetts employed, annually, one hundred and eighty-three vessels, of thirteen thousand eight hundred and twenty tons, in the northern whale fishery, and one hundred and twenty-one vessels, of fourteen thousand and twenty-six tons, in the southern; navigated by four thousand and fifty-nine seamen. The peculiar mode of paying the seamen, in these hazardous voyages, has contributed not a little to the success of the voyages themselves. Each has a share in the profits of the voyage, and is dependent on his own exertions for the reward of his toils. Whether he shall be rich or poor, depends on his activity in managing the boat, in pursuit of the whale, and his dexterity, in directing the harpoon. This has led to a spirit of enterprise and hardihood, never surpassed, if ever equalled, by the seamen of any nation in the world.

During the war of the American revolution, this fishery was destroyed; on the return of peace, it recovered, by degrees, and from 1787 to 1789, ninety-one vessels, of five thousand eight hundred and twenty tons, were annually employed in the northern fishery, and thirty-one vessels, of four thousand three hundred and ninety tons, in the southern, with one thousand six hundred and eleven seamen. The quantity of spermaceti oil taken annually, from 1771 to 1775, was thirty-nine thousand three hundred and ninety barrels, and of whale oil eight thousand six hundred and fifty. From 1787 to 1789, the quantity of spermaceti taken annually was seven thousand nine hundred and eighty barrels, and whale oil thirteen thousand one hundred and thirty. In the representation made to Congress in the year 1790, by the legislature of Massachusetts, it is stated that, before the late war, about four thousand seamen, and twenty-four thousand tons of shipping were annually employed from that state in the whale fishery, and that the produce thereof was about £350,000 lawful money, or about 1,160,000 dollars. A great part of this fishery has been carried on from Nantucket, where it originated, a small island about fifteen miles in length, and two or three miles in breadth, situated about thirty miles from the coast. Before the revolutionary war, this small island had sixty-five ships, of four thousand eight hundred and seventy-five tons, annually employed in the northern, and eighty-five ships, of ten thousand two hundred tons, in the southern fishery. From 1787 to 1789, it had only eighteen ships, of one thousand three hundred and fifty tons, in the northern, and eighteen ships, of two thousand seven hundred tons, in the southern fishery. For many years past, this fishery has been carried on from this island, and from New Bedford, a large commercial and flourishing town on the coast, in its neighbourhood, and has employed from fifteen thousand to eighteen thousand tons of shipping, principally in the Southern Seas. Although Great Britain has, at various times, given large bounties to her ships employed in this fishery, yet the whalemen of Nantucket and New-Bedford, unprotected, and unsupported by any thing but their own industry and enterprise, have generally been able to meet their competitors in a foreign market. The value of spermaceti and common whale oil, whale bone, and spermaceti candles exported since 1802, has been as follows:—

| | Whale (common) oil and bone. *Dolls.* | Spermaceti oil and candles. *Dolls.* |
|---|---|---|
| 1803 | 280,000 | 175,000 |
| 1804 | 310,000 | 70,000 |
| 1805 | 315,000 | 163,000 |
| 1806 | 418,000 | 182,000 |
| 1807 | 476,000 | 139,000 |
| 1808 | 88,000 | 33,000 |
| 1809 | 169,000 | 136,000 |
| 1810 | 222,000 | 132,000 |
| 1811 | 78,000 | 273,000 |
| 1812 | 56,000 | 141,000 |
| 1813 | 2,500 | 10,500 |
| 1814 | 1,000 | 9,000 |

The common whale oil finds a market in the West Indies, Great Britain, France, Spain, and Portugal. The greatest part of the spermaceti oil is carried to Great Britain. The late war between the United States and Great Britain has again almost annihilated the cod and whale fisheries*. While in the years previous to the restrictive system and the war, the fisheries furnished articles for exportation to an amount of more than three millions of dollars, in 1814, the exports of the produce of the fisheries is reduced to the sum of 188,000 dollars.

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* Twenty-four whalemen were taken by the British in the late war.

## No. III.

During the publication of this little work, I was favoured, through the medium of a friend, with some very important remarks made by a Gentleman of great nautical skill and experience, in the year 1814, on board his Majesty's ship Sybyll, while in the North Seas, for the protection of the Greenland fishery.

The first point to which he alludes, is the variation of the compass; and, respecting it, he observes, "Being anxious that every thing possible should be done for the improvement of navigation, I determined, while in those high latitudes, to take every opportunity of observing to what extent the variation of the compass might be affected by the ship's course. A paper containing Captain Flinders' observations on the same subject, had previously been sent to me by the Lords of the Admiralty; and as these observations had chiefly been made in high southern latitudes, it became doubly important to ascertain whether the same laws were followed in high northern latitudes. Experience has completely proved that they are; and, in fact, it is some years since I ascertained that the course down the English

Channel, just taking the ship clear of head-lands, the opposite one up Channel would run the ship on the French coast.

"In order to render the result of my observations on this subject as clear as possible, I have selected a few, and inserted them in the order they were taken. The correctness of them may be relied on, being all calculated by two persons, examined by a third, and the whole taken by myself.

"I boarded a good many Greenland ships when in the North, whose masters all agreed in maintaining, that they experienced *strong south-east currents* on their return home, and were often confounded at making the coast of Norway when they expected to make that of Shetland. Now, I have no hesitation in saying, that if the same difference in the variation is to be found on board of a Greenland ship, that was found to exist in the Sybyll and Princess Carolina, the idea of a strong easterly current is unfounded, and is merely resorted to, to account for the error in their dead reckoning, arising from their not allowing a sufficiency of westerly variation in running from the ice to the south-west. A degree of longitude is soon lost in those high latitudes, and the error must increase in running to the south-west, if proper allowance be not made; for I am very certain that a different variation will be found on every point of the compass the ship's head is put on. The greatest will be found when the *ship's head is at West,* gradually declining till it comes to East.

"The Princess Carolina, as well as Sybyll, experienced *the same currents* as the masters of the Greenland ships supposed to exist; for when we made Shetland, by Arnold's chronometer, No. 1981, to a mile, our dead reckonings were nearly 6° *to the westward in both ships;* and when we made the North Cape by the same chronometer, (which was under my own care), the longitude in both ships, by account, was 4° to the westward also. The one error was occasioned by not allowing a sufficient quantity of variation in running to the south-west, and the other by allowing too much in running to the north-east.

"I do not know whether the same observations may hold good when applied to ships coming from the Baltic; but should they do so, they must effectually account for ships getting down on the coast of Holland, when they suppose themselves well over in Mid-channel. Perhaps this may, in some measure, serve to account for the loss of so many of our brave tars when coming from that sea.

" Notwithstanding the whole tenor of my observations, as well as those of Captain Flinders, led me to believe that the cause of the variation must exist in the ship; yet I had great difficulty in coming to a conclusion so remote from what had formerly been held to be truth; and for that reason, during our stay at St. Mary's, I took the opportunity of making a decisive experiment on this subject. I first went with the Azimuth compass to St. Agnes' light-house, from which I *set* the flag-staff on St. Mary's Castle E. 31° N. I next went to St. Mary's Castle, and from it set the light-house W. 31° S. Finding these opposite bearings thus correspond when on shore, I am fully persuaded the cause of the differences observed when at sea, must exist in the ship."

After making these remarks on the variation of the compass, he next goes on to make some observations as they occurred in the voyage.

" On the 16th of June, saw Bear, or Cherry Island, which, at a distance, looks like a saddle, both extremities being very high, and the middle low. It may be seen 20 leagues off in clear weather. At noon, it bore by compass, N. *b* E. $\frac{1}{2}$ E. when I observed in 73° 44′ N. good observation, and our chronometer gave good sights, 20° 3′ E. By seven P. M. we had run 33 miles on a N. N. W.

course corrected, when the south end of the island bore by compass E. *b* N. 3 or 4 leagues, which brought up from noon, will make it in 74° 19′ N. Lat. and 20° 7′ E. Long. At this time it came on foggy, and prevented us from ascertaining its extent. Soundings are to be obtained to the southward of this island, and up to Spitzbergen; black mud and small shells.

"19th, Saw Spitzbergen, and on the 20th were close in with the South Cape. We carried regular soundings to 11 fathoms, about three miles off; but this part of the coast appearing to be surrounded with rocks, we did not attempt approaching it more closely. Our chronometers made it in about 16° 2′ E. We saw some beacons placed along the coast, each in the form of a cross, which are, no doubt, placed there for the guidance of the Russian hunters.

"About this time we bore away for the North Cape, in order to water, and procure any refreshments that could be got. After making the land to the westward of the Cape, we stood into a large bay, to look for a place of safety to accomplish our purpose, hardly suspecting that any inhabitants were to be found. On standing in, we observed some boats under sail, one of which was soon brought along side, that contained a family of Finmarkers, some of whom spoke the Danish language. They informed us of the town of *Hammerfest* being close by, and offered to take us in. This offer was soon embraced, and in a few hours, the town opened to our view; which, to our astonishment, contained a church, batteries, &c. The Captain of the Port soon made his appearance, and anchored us in safety. I made a survey of this place, and ascertained its latitude and longitude as correctly as possible, which are as follow:

| | |
|---|---|
| The latitude of Hammerfest Town, ascertained by a good Sextant and False-Horizon, taken on shore, was found . . | 70° 38′ 34″ N. |
| Longitude, by Arnold's chronometer, No. 1981, taken on shore, by the same means . . | 24 28 0 E. |
| Variation by same means . | 11 4 0 W. |
| Range of thermometer on board from | 70° to 75° |
| Range of thermometer on shore | 75 80 |

High water on full and change, at three hours; rise and fall 8 feet. I found it is very much influenced by the wind, and when it blows strongly from the N. W it rises considerably higher.

"The town of Hammerfest is situated on the island of Qualoon, 25 Danish miles in extent, and is one of the departments of West Finmark, which contains 25,000 souls. This province is divided into parishes, each having its priest, and over the whole is a bishop, to enforce the duties of the Lutheran religion. There are 200 regular soldiers scattered in different quarters of the province, commanded by a Captain, who governs the whole country. About 30 houses compose the town of Hammerfest, with about 200 inhabitants; with one church, one hospital, a custom-house, and some public and private stores. The custom-house has regular established officers appointed from Copenhagen. The Captain of the port is under the same appointment, and wears the uniform of the Danish navy.

"The principal trade of this place is in furs and fish, which are all sent into Russia. The extent of the imports and exports I was not able accurately to learn, but suppose them, in time of peace, to be something considerable. I was told by the Captain of the port, that in 1808, 200 sail had been seen here at one time. The Russian merchants have their agents scattered all over West as well as East Finmark. They make their purchases from the Finmarker, with flour, brandy, sail-cloth, fishing-lines, coarse cloth, and other articles of that kind, for enabling them to carry on the fishing and hunting business. I was informed that 3000 boats were yearly employed by the Finmarkers in fishing; for as soon as the hunting season is over, they devote their whole attention to the fisheries. Four or five men are attached to each boat.

"Cod and herrings abound on this coast, and are the finest I ever saw, being of a much firmer and better texture than those caught on the banks of Newfoundland.

"As the Finmarker dries his fish in the sun, without salt, it must be but a very poor employment; but as all his wants are easily supplied, with this kind of commerce he is satisfied, and thinks money of little consideration. Perhaps, after all, they are more happy than the lower orders of more enlightened nations.

"Perhaps a fishing establishment at Hammerfest might be attended with considerable advantage. The deepness of the water would render a departure from the mode of fishing observed on the banks of Newfoundland indispensable. The hook and line are here of little consequence. The Finmarkers all fish with nets, and we adopted the same method with considerable success. No place is better adapted than this for curing with salt. From its situation, embosomed by hills, the thermometer in the summer, as our observations shew, often reaches a very high degree of temperature. With proper management, a cod might then have been prepared for the market in three days, while at Newfoundland, in the best weather, it requires five.

"At Newfoundland, they have only from 12 to 14 hours sun; at Hammerfest, nearly four months. The advantages, therefore, as to climate, on the side of Hammerfest, are most obvious. Perhaps, too, an establishment in the North might, in time of war, be of some importance, as it would the better enable us to prevent our enemies enjoying any share of so lucrative a trade as the whale fishing.

"The cold is by no means so intense in winter as might be expected. The inner harbour, though seldom agitated by winds, was never seen frozen over; and the moonlight is sufficiently strong to render labour practicable. Nature has been very provident with respect to fuel, the whole country abounding with good turf. The severity of the climate diminishes the vital principle in the human race; the men soon get old, and the women are past child-bearing at 35.

"The chace of the bear, who is never killed before January or February, when they are in the best condition, sets the courage and cool deliberation of the Finmarker in a most conspicuous point of view. In October, the Finmarker carefully watches the haunts of the bear, who at that time seeks for a winter retreat; and having marked it, returns in January to the attack. Having prepared a lance, to which a *cross-bar* is affixed, about one foot from the point, the Finmarker, when the wind is in a favourable direction, makes a large fire before the bear's den; the smoke soon irritating the animals, they rush out, one by one: at this critical moment the Finmarker, concealing his lance, places himself behind the fire, and the bear, rearing on his hind legs, in order to seize him, he plunges his lance up to the cross-bar in his breast*. The rest are served in the same manner.

"The rein deer are here extremely plenty, and very dear; we paid £2 for one of them. Certainly they had heard something of the wealth of John Bull.

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* The intrepidity of the Finmarker, and the dangers he has to encounter in the chase of the seal, are well described in Acerbi's excellent Travels in the North, vol. i. p. 291.

"Some of the better sort of people at Hammerfest, possessed a few cows and sheep. The cows were not larger than a bull-dog, and the sheep like a good tom-cat.

"The female beauty of this place had sufficient attraction to induce the gentlemen of the Princess Carolina and Sybyll, to give them a ball and supper. The invitation was quite general, and the whole went off with great eclat.

"Most of the Russian agents and merchants spoke the English language; but they were by no means anxious to communicate information which they thought might, one day or other, ruin their commercial pursuits. It was only when they got a good dinner, and plenty of wine, that any thing particular could be drawn from them.

"The Sybyll and Princess Carolina sailed from the Downs on the 6th of May, and on the 18th of August arrived in Long Hope Sound. Our highest latitude was 78° 16′, where we saw many of the Greenland ships. We sailed as far east as 32° 44′, and experienced one continued series of good weather. The thermometer never was below 26° in the night, and seldom above 44° in the day, with the exception of the time we were at Hammerfest."

| Mon. Day, and Year. | A.M. or P. M. | Latitude in | Longitude in | ☉ Amplitude corrected for dip, &c. | Ship's head. | Magnetic amplitude. | Variation. | Difference. |
|---|---|---|---|---|---|---|---|---|
| 1814 May | | North. | East. | | | | | |
| 11 | A.M. | 53° 33 | 2° 22 | 24° 12′ | N.W. | S. 61° 15′ E. | 24° 49 W | |
| 12 | A.M. | 54 34 | 2 37 | 23 59 | N.W.*b*N. | S. 61 20 E. | 26 18 | |
| 16 | A.M. | 57 2 | 3 37 | 24 1 | N.N.E. | S. 66 45 E. | 21 35 | 5° 25. |
| 16 | P.M. | 57 53 | 2 21 | 21 32 | N*b*W¼W | N. 62 50 W | 27 0 | |
| 17 | A.M. | 59 4 | 0 32 | 14 42 | N.*b*W. | S. 75 20 E. | 27 40 | |
| 24 | P.M. | 60 27 | 1 58 | 15 21 | N.E.*b*E. | N. 50 15 W | 24 49 | |
| 25 | A.M. | 60 27 | 2 0 | 27 6 | N.*b*W. | S. 60 40 E. | 24 4 | |
| 26 | P.M. | 60 52 | 2 50 | 18 33 | N.E. | N. 58 40 W | 20 14 | |
| June | | | | | | | | |
| 2 | P.M. | 73 14 | 18 10 | 17 50 | N.E.*b*N. | N. 60 30 W | 11 35 | |
| 4 | P.M. | 74 27 | 19 58 | 19 9 | W.S.W. | N. 60 30 W | 14 28 | |
| 8 | P.M. | 73 59 | 29 55 | 18 20 | N.E.*b*N. | N. 66 15 W | 4 55 | 6 25 |
| 8 | P.M. | 74 0 | 29 52 | 15 22 | W.S.W. | N. 48 40 W | 11 20 | |
| 13 | P.M. | 71 10 | 27 10 | 8 52 | S.W.½S. | N. 25 0 W | 13 10 | |
| 18 | P.M. | 75 22 | 18 21 | 15 2 | N.*b*E. | N. 37 50 W | 16 12 | |
| 26 | P.M. | 78 11 | 6 55 | 20 38 | E.S.E. | N. 55 0 W | 19 6 | |
| July | | | | | | | | |
| 3 | A.M. | 72 53 | 21 21 | 17 47 | S.S.E. | S. 78 40 E. | 9 22 | |
| 22 | P.M. | 70 27 | 10 38 | 17 14 | E.S.E. | N. 61 30 W | 16 6 | |
| Aug. | | | | | | | | |
| 1 | P.M. | 68 58 | 10 25 | 15 26 | W.½N. | N. 52 40 W | 26 42 | |
| 2 | A.M. | 68 33 | 9 10 | 13 40 | W.½*b*S.E. | S. 79 32 E. | 25 14 | |
| 2 | P.M. | 68 20 | 8 59 | 14 32 | S.S.W. | N. 55 30 W | 22 42 | 7 37 |
| 2 | P.M. | 68 20 | 8 59 | 13 50 | West. | N. 51 16 W | 25 11 | |
| 2 | P.M. | 68 20 | 8 59 | 12 57 | N.E.*b*N. | N. 36 20 W | 17 34 | |
| 8 | P.M. | 67 37 | 3 20 | 15 6 | South, | N. 57 35 W | 26 43 | |
| 11 | A.M. | 62 10 | 0 20 | 13 48 | W.*b*N. | S. 65 55 E. | 31 15 | |
| | | | West, | | | | | |
| 14 | A.M. | 61 23 | 0 6 | 20 18 | W.½S. | S. 52 30 E. | 30 36 | 5 8 |
| 14 | P.M. | 60 57 | 0 23 | 15 47 | E.S.E. | N. 60 0 W | 25 28 | |
| 14 | P.M. | 60 57 | 0 10 | 3 00 | W.*b*S. | N. 34 30 W | 30 40 | 10 25 |
| 15 | P.M. | 60 25 | 0 28 | 11 52 | E.S.E. | N. 62 0 W | 20 15 | |
| 17 | P.M. | 59 7 | — — | 13 23 | W.*b*S. | N. 55 30 W | 30 32 | |
| Sept. | | | West, | | | | | |
| 2 | A.M. | 58 17 | 8 31 | 6 58 | N.W. | S. 61 15 E. | 33 1 | 3 30 |
| 2 | A.M. | 58 17 | 8 31 | 8 26 | North, | S. 62 17 E. | 29 31 | |
| 13 | P.M. | 49 59 | 6 22 | 8 12 | S.E.*b*E. | N. 71 30 W | 22 30 | |
| 14 | A.M. | 49 6 | — — | 19 5 | - - | S. 46 30 E. | 27 16 | |
| 14 | P.M. | — — | — — | — — | - - | N. 57 0 W | 27 31 | |

## *Remarks, &c. &c.*

Very good sights.
— —
— —
— —
— —
— —
— —
— —

Very good. Sounded 100 fathoms, fine mud.
Not very good.
Very good. } Both sights were equally good. The ship was immediately put on the other tack.
Very good. }
Very good. North Cape N.W.*b*W¼W. 5 leagues.
Very good.
Very good. Ship surrounded with ice.

Very good.
Very good.

Very good. Ship some motion.
Very good.

All these sights were equally good. The evening was remarkably fine, with a light air from the S.E. The first set was taken with the ship's head S.S.W.; 2d set at west; and 3d set at N.E.*b*N. The ship was put round in this manner for the purpose.
The mean of six sets all good. The weather calm and fine.
The mean of two sets ship steady. Longitude obtained by ⊙, ☽ and chronometer.
Very good.
Very good. North end of Shetland, S. 11° E. 5 or 6 leagues.
Very good. North end of Shetland, S. 48° W. 4 or 5 leagues.
Very good. Outer Skerry, Shetland, S.S.W. 2 miles.
Very good. Lamb Head, Orkneys, W.½S. 4 or 5 miles.
Both these sights were good, and the ship was put on the courses as given purposely. St. Kilda Island S. 9° W. 8 or 9 leagues. No soundings at 180 fathoms.
At anchor in St. Mary's. St. Agnes Light-House W. 54° S. Castle E. 51° S.
This azimuth was taken on shore at St. Agnes's Light-house, with false horizon.
This amplitude was taken on shore at St. Mary's flag-staff.—Most excellent.

## No. IV.

In the Appendix to the second volume of Flinders' Voyage, which has lately been published, there is an article of considerable length and ability, on the Variation of the Compass. In that article, the observations made by that excellent sailor, corroborate, in a remarkable degree, and accord with those made in the Sybyll. I have selected a few of the most decisive instances.

| 1802. | Lat. | Long. | Course. | Var. | Diff. |
|---|---|---|---|---|---|
| April<br>22. A.M. | 39° 38′ S. | 144° 40′ E. az. | W.S.W | 11° 52′ E. | 3°53′ |
| 24. | 39 38 | 144 1 | S. | 7 59 | |
| July<br>15. P.M. | 34 5 | 135 9 | S.E.*b*E. | 1 33 W. | 5 39 |
| — | 34 6 | 135 9 ampl. | S.W.*b*W. | 3 56 E. | |
| 28. | 25 0 | 153 23 | N.W.*b*N. | 9 39 | 3 6 |
| 29. | 24 43 | 153 27 | S.E ½ S. | 6 33 | |

After such a coincidence, the fact of the variations depending greatly on the ship's course, cannot possibly be called in question; though it is certainly surprising that it has not been sooner attended to in the way that it deserves, by other navigators; for it did not altogether escape their observations. Mr. Wales, astronomer to Captain Cook's ship, the Resolution, had made the same observations in a pretty accurate manner; and M. Entrecasteaux, though without assigning any cause, says, that the "Compass shewed differences of several degrees in variation at sea, though observed with the greatest care, and within the space of a few minutes."

After a more enlarged series of observations shall have been taken, and after the attention of astronomers is directed to this fact, we may confidently expect a most important improvement in the science of Navigation.

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## No. V.

The following article "ON THE TREMENDOUS CONCUSSIONS OF THE FIELDS OF ICE," in the Arctic Sea, is extracted from Mr. Scoresby's valuable Memoir on "Polar Ice" in the Wernerian Society's Transactions.

"The occasional rapid motion of fields, with the strange effects produced on any opposing substance, exhibited by such bodies, is one of the most striking objects this country presents, and is certainly the most terrific. They not unfrequently acquire a rotatory movement, whereby their circumference attains a velocity of several miles per hour. A field, thus in motion, coming in contact with another at rest, or more especially with a contrary direction of movement, produces a dreadful shock. A body of more than ten thousand millions of tons in weight*, meeting with resistance, when in motion, the consequences may possibly be conceived!

"The weaker field is crushed with an awful noise; sometimes the destruction is mutual. Pieces of huge dimensions and weight, are not unfrequently piled upon the top, to the height of twenty or thirty feet, whilst doubtless a proportionate quantity is depressed beneath. The view of those stupendous effects in *safety*, exhibits a picture sublimely grand, but where there is danger of being overwhelmed, terror and dismay must be the predomiment feelings. The whale-fishers at all times require unremitting vigilance to secure their safety, but scarcely in any situation, so much as when navigating amidst those fields. In foggy weather, they are particularly dangerous, as their motion cannot then be distinctly observed. It may easily be imagined, that the strongest ship can no more withstand the shock of the contact of two fields, than a sheet of paper can stop a musket ball. Numbers of vessels, since the establishment of the fishery, have been thus destroyed. Some have been thrown upon the ice; some have had their hulls completely torn open; and others have been buried beneath the heaped fragments of the ice.

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* A field of thirty nautical miles square surface, and thirteen feet in thickness, would weigh somewhat more than is here mentioned. Allowing it to displace the water in which it floats, to the depth of eleven feet, the weight would appear to be 10,182,857,142, nearly in the proportion of a cubic foot of sea-water to 64 lbs.

"In the year 1804, I had a good opportunity of witnessing the effects produced by the lesser masses in motion. Passing between two fields of bay-ice, about a foot in thickness, they were observed rapidly to approach each other, and before our ship could pass the strait, they met with a velocity of three or four miles per hour; the one overlaid the other, and presently covered many acres of surface. The ship proving an obstacle to the course of the ice, it squeezed up on both sides, shaking her in a dreadful manner, and producing a loud grinding, or lengthened and acute tremulous noise, accordingly as the degree of pressure was diminished or increased, until it had risen as high as the deck. After about two hours, the velocity was diminished to a state of rest; and, soon afterwards, the two sheets of ice receded from each other, nearly as rapidly as they had before advanced. The ship, in this case, did not receive any injury; but had the ice been only half a foot thicker, she would probably have been wrecked.

"In the month of May of the present year (1813), I witnessed a more tremendous scene. Whilst navigating amidst the most ponderous ice which the Greenland seas present, in the prospect of making our escape from a state of *besetment*, our progress was unexpectedly arrested by an isthmus of ice, about a mile in breadth, formed by the coalition of the point of an immense *field* on the north, with that of an aggregation of *floes* on the south. To the north field, we moored the ship, in the hope of the ice separating in this place. I then quitted the ship, and travelled over the ice to the point of collision, to observe the state of the bar which now prevented our release. I immediately discovered that the two points had but recently met; that already a prodigious mass of rubbish had been squeezed upon the top, and that the motion had not abated.

The fields continued to overlay each other with a majestic motion, producing a noise resembling that of complicated machinery, or distant thunder. The pressure was so immense, that numerous fissures were occasioned, and the ice repeatedly rent beneath my feet. In one of the fissures, I found the snow on the level to be three and a half feet deep, and the ice upwards of twelve. In one place, hummocks had been thrown up to the height of twenty feet from the surface of the field, and at least twenty-five feet from the level of the water; they extended fifty or sixty yards in length, and fifteen in breadth, forming a mass of about two thousand tons in weight. The majestic unvaried movement of the ice—the singular noise with which it was accompanied—the tremendous power exerted—and the wonderful effects produced—were calculated to excite sensations of novelty and grandeur, in the mind of even the most careless spectator!

"Sometimes these motions of the ice may be accounted for. Fields are disturbed by currents—the wind—or the pressure of other ice against them. Though the set of the current be generally towards the south-west, yet it seems occasionally to vary: the wind forces all ice to leeward, with a velocity nearly in the inverse proportion to its depth under water; light ice consequently drives faster than heavy ice, and loose ice than fields: loose ice meeting the side of a field in its course, becomes deflected, and its re-action causes a circular motion of the field. Fields may approximate each other from three causes: *First*, If the lighter ice be to windward, it will, of necessity, be impelled towards the heavier; *secondly*, As the wind frequently commences blowing on the windward side of the ice, and continues several hours before it is felt a few miles distant to leeward, the field begins to drift before the wind can produce any impression on ice, on its opposite side; and, *thirdly*, Which is not an uncommon case, by the two fields being impelled towards each other, by winds acting on each from opposite quarters.

"The closing of heavy ice, encircling a quantity of bay ice, causes it to run together with such force, that it overlaps wherever two sheets meet, until it sometimes attains the thickness of many feet. Drift ice does not often coalesce with such a pressure as to endanger any ship which may happen to be *beset* in it: when, however, land opposes its drift, or the ship is a great distance immured amongst it, the pressure is sometimes alarming."

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## No. VI.

*On the approximation towards the Poles, and on the possibility of reaching the North Pole. From Mr. Scoresby's paper in the Wernerian Society's Transactions.*

" We have already remarked, that the 80th degree of north latitude is almost annually accessible to the Greenland whale-fishers, and that this latitude, on particular occasions, has been exceeded. In one of the first attempts which appears to have been made to explore the circumpolar regions, in the year 1607, Henry Hudson penetrated the ice on the north-western coast of Spitzbergen to the latitude of 80° 23′ N. In 1773, Captain Phipps, in "a voyage towards the North Pole," advanced, on a similar track, to 80° 37′ of north latitude. In the year 1806, the ship Resolution of Whitby, commanded by my father, (whose extraordinary perseverance and nautical ability are well appreciated by those in the Greenland trade, and proved by his never-failing success,) was forced, by astonishing efforts, through a vast body of ice, which commenced in the place of the usual *barrier*, but exceeded its general extent, by at least a hundred miles. We * then reached a navigable sea, and advanced without hinderance, to the latitude of 81½ north, a distance of only 170 leagues from the pole; which is, I imagine, one of the most extraordinary approximations yet realized."

* * * * * * * *

"The southern hemisphere, towards the pole, was explored by Captain Cook, in various meridians, and with indefatigable perseverance. In his first attempt, in 1772, they met with ice in about 51° south, and longitude 21° east. They saw great fields in 55° south, on the 17th of January 1773, and, on February the 24th, were stopped by field-ice in 62° south latitude, and 95° east longitude.

"Again, on the second attempt, in December of the same year, they first met with ice in about

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* I accompanied my father, on this voyage, in the capacity of chief mate.

62° south latitude, and 172-173° west longitude; and on the 15th, saw field-ice in 66°. On the 30th January 1774, they were stopped by immense ice-fields in latitude 71° 10′ 30″ and 107 west longitude, which was the most considerable approximation towards the south pole that had ever been effected.

"Thus, it appears, that there subsists a remarkable difference between the two hemispheres, with regard to the approach of the ice towards the equator; the ice of the southern, being much less pervious, and extending to much lower latitudes, than that of the northern hemisphere.

"That the 73d or 74th degree of north latitude can be attained at any season of the year; whereas the 71st degree of south latitude has been but once passed.—And,

"That, whilst the antarctic *ne plus ultra* appears to be the 72d degree of latitude, that of the arctic extends full 600 miles further; the nearest approach to the southern pole being a distance of 1130 miles, but to the north, only 510 miles.

"With regard to the probability of exploring the regions more immediately in the vicinity of the pole than has yet been accomplished, or even of reaching the pole itself, I anticipate, that, without reference to the reasoning on which the opision is grounded, it might be deemed the frenzied speculation of a disordered fancy. I flatter myself, however, that I shall be able to satisfy the Society, that the performance of a journey over a surface of ice, from the north of Spitzbergen to the pole, is a project which might be undertaken, with at least a probability of success.

“ It must be allowed, that many known difficulties would require to be surmounted—many dangers to be encountered—and that some circumstances might possibly occur, which would at once annul the success of the undertaking. Of these classes of objections, the following strike me as being the most formidable, which, after briefly stating, I shall individually consider in their order :

1. The difficulty of performing a journey of 1200 miles, 600 going and 600 returning, over a surface of ice—of procuring a sufficient conveyance—and of carrying a necessary supply of provisions and apparatus, as well as attendants.

“ The difficulties may be increased by

(*a.*) Soft snow ;
(*b.*) Want of continuity of the ice ;
(*c.*) Rough ice ; and
(*d.*) Mountainous ice.

"2. The difficulty of ascertaining the route, and especially of the return, arising from the perpendicularity of the magnetical needle.

"3. Dangers to be apprehended,

(a.) From excessive cold;

(b.) From wild beasts;

"4. Impediments which would frustrate the scheme.

(a.) Mountainous land;

(b.) Expanse of sea;

(c.) Constant cloudy atmosphere.

"1. It is evident that a journey of 1200 miles, under the existing difficulties, would be too arduous a task to be undertaken and performed by human exertions alone, but would require the assistance of some fleet quadrupeds, accustomed to the harness.

"Rein-deer, or dogs, appear to be the most appropriate. If the former could sustain a sea-voyage, they might be refreshed in the northern part of Spitzbergen, which affords their natural food. They could be yoked to sledges framed of the lightest materials, adapted for the accommodation of the adventurers, and the conveyance of the requisites. The provision for the adventurers, for compactness, might consist of portable soups, potted meats, &c. and compressed lichen for the rein-deer. The instruments and apparatus might be in a great measure confined to indispensables, and those of the most portable kinds; such as tents, defensive weapons, sextants, chronometers, magnetic needles, thermometers, &c.

" As the rein-deer is, however, a delicate animal, difficult to guide, and might be troublesome if thin or broken ice were required to be passed; dogs would seem, in some respects to be preferable. In either case, the animals must be procured from the countries wherein they are trained, and drivers would probably be required with them. The journey might be accelerated, by expanding a sail to every favourable breeze, at the same time, the animals would be relieved from the oppression of their draughts. It would appear, from the reputed speed of the rein-deer, that, under favourable circumstances, the journey might be accomplished even in a fortnight, allowing time for rest and accidental delays. It would require a month or six weeks with dogs, at a moderate speed; and, in the event of the failure of these animals on the journey, it does not seem impossible that the return should be effected on foot, with sledges for the provisions and apparatus.

" *(a.)* Soft snow would diminish the speed, and augment the fatigue of the animal; to avoid which, therefore, it would be necessary to set out by the close of the month of April, or the beginning of May; or at least, some time before the severity of the frost should be too greatly relaxed.

"(*b.*) Want of continuity of the ice, would certainly occasion a troublesome interruption; it might nevertheless be overcome, by having the sledges adapted to answer the purpose of boats *; and it is to be expected, that although openings amidst the ice should occur, yet a winding course might in general be pursued, so as to prevent any very great stoppage.

"(*c.*) Many of the most prodigious fields, are entirely free from abrupt hummocks from one extremity to the other, and field ice, as it appears in general, would be easily palpable.

"(*d.*) The degree of interruption from mountainous ice, would depend on the quality of its surface. If, as is most probable, it were smooth, and free from abrupt slopes, it would not prevent the success of the expedition.

"2. The direct route would be pointed out, for some part of the way at least, by the magnetic needle; and when its pole should be directed towards the zenith, should that position ever obtain, the sun would be the only guide. Or, the position of the true north being once ascertained, three sledges in a line, at a convenient distance apart, might enable the leading one to keep a direct course. A chronometer would be an indispensable requisite, as the opportunity for lunar observations could not be expected to occur sufficiently often. Were the Pole gained, the bearing of the sun at the time of noon, by a chronometer adjusted to the meridian of north-west Spitzbergen, would afford a line of direction for the return; and, the position, in regard to longitude, (were the sun visible) could be corrected, at least twice a-day, as the latitude decreased. The degrees of longitude being so contracted, any required position would be pointed out by the watch, with the greatest precision.

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* The sledges might consist of slender frames of wood, with the ribs of some quadruped, and coverings of water-proof skins, or other materials equally light.

"3. *(a.)* Among the dangers to be apprehended, the coldness of the air stands prominent. As, however, the cold is not sensibly different, between the latitudes of 70° and 80° with a strong north wind, it may be presumed that at the Pole itself, it would be very little more oppressive than at the borders of the main ice, in the 81st degree of north latitude, under a hard northerly gale: And since this cold is supportable, that of the Pole may be deemed so likewise. The injurious effects of the severity of the weather, might be avoided by a judicious choice of woollen clothing, the external air being met by an outward garment of varnished silk, and the face defended by a mask, with eyes of glass. The exterior garment, would, at the same time, be water-proof, and thus capable of shielding the body from accidental moisture.

" *(b.)* The white bear is the only ferocious animal known to inhabit those regions, and he rarely makes an attack upon man. At any rate he might be repulsed by any offensive weapon. And, as the prey of the bears is scarce in the most northern latitudes, they would not probably occur in any abundance.

" 4. Hitherto no insurmountable objection has been presented: a few serious obstacles, should they occur, remain to be considered.

" *(a.)* Mountainous land, like mountainous ice, would check the progress of the expedition, in proportion to the ruggedness of its surface, and the steepness of its cliffs. Its occurrence would nevertheless, form an interesting discovery.

" *(b.)* From the pretended excursions of the Dutch, many have believed that the sea at the Pole is free from ice. Were this really the case, the circumstance would certainly be an extraordinary one; but I consider it too improbable to render it necessary to hazard any opinion concerning it.

"*(c.)* From the facts stated in pages 319, 320, of this paper, I think we derive a sanction for calculating on clear weather at all times, but with southerly storms; and, as these occur but rarely, the progress of the journey would not probably be suspended by an obscure sky, except for short periods, and at distant intervals.

"Notwithstanding I have now distinctly considered every obvious objection and difficulty to be surmounted, I am nevertheless sensible, that in the realising of any project or discovery, whether by sea or on land, there will occur many adventitious circumstances, which may tend to mar the progress of the best regulated expedition. Therefore, it may not be improper to confirm and strengthen the whole, by directing the attention to what has been done, in journeying under difficulties which may bear a comparison with the undertaking here alluded to, and occasionally under circumstances the most unfavourable to success.

"1st. When treating of icebergs, I alluded to the journey of ALEXEI MARKOFF, in which it appears, that he performed near eight hundred miles across a surface of packed ice, in the spring of

1715, in a sledge drawn by dogs; and consequently, that he might be supposed to have encountered the principal difficulties that could be expected in the proposed scheme, whilst we have the advantage of improving by his experience.

"2d. Speaking of the south-western tendency of the ice, I have also noticed the loss of several of the Dutch Greenland fleet in 1777, from which we learn, that part of the unfortunate suffering crews, under every privation of provision and clothing, and exposed to the severity of an Arctic winter, accomplished a journey on foot, along the coasts of Old Greenland, from the east side, near Staten Hook, to the Danish settlements on the west, a distance of near an hundred leagues.

"3d. On contrasting the projected polar journey with the catalogue of marvellous occurrences, and wonderful preservations which are exhibited in the records of maritime disasters*, the difficulties of the undertaking in a great measure vanish, and its dangers are eclipsed, by the wonderful results which necessity has, in various instances, accomplished."

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* See "Shipwrecks and Disasters at Sea."

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